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THE #1 MAGAZINE FOR HOME WOODWORKERS

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DECEMBER 1989 • ISSUE NO. 32
Display until December 19

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Shop Tested
HOW TO MAKE TAMBOUR

TOXIC WOOD
A SENSITIVE SHOP ISSUE

Bonus Feature
HOW TO SHOP FOR BANDSAW BLADES

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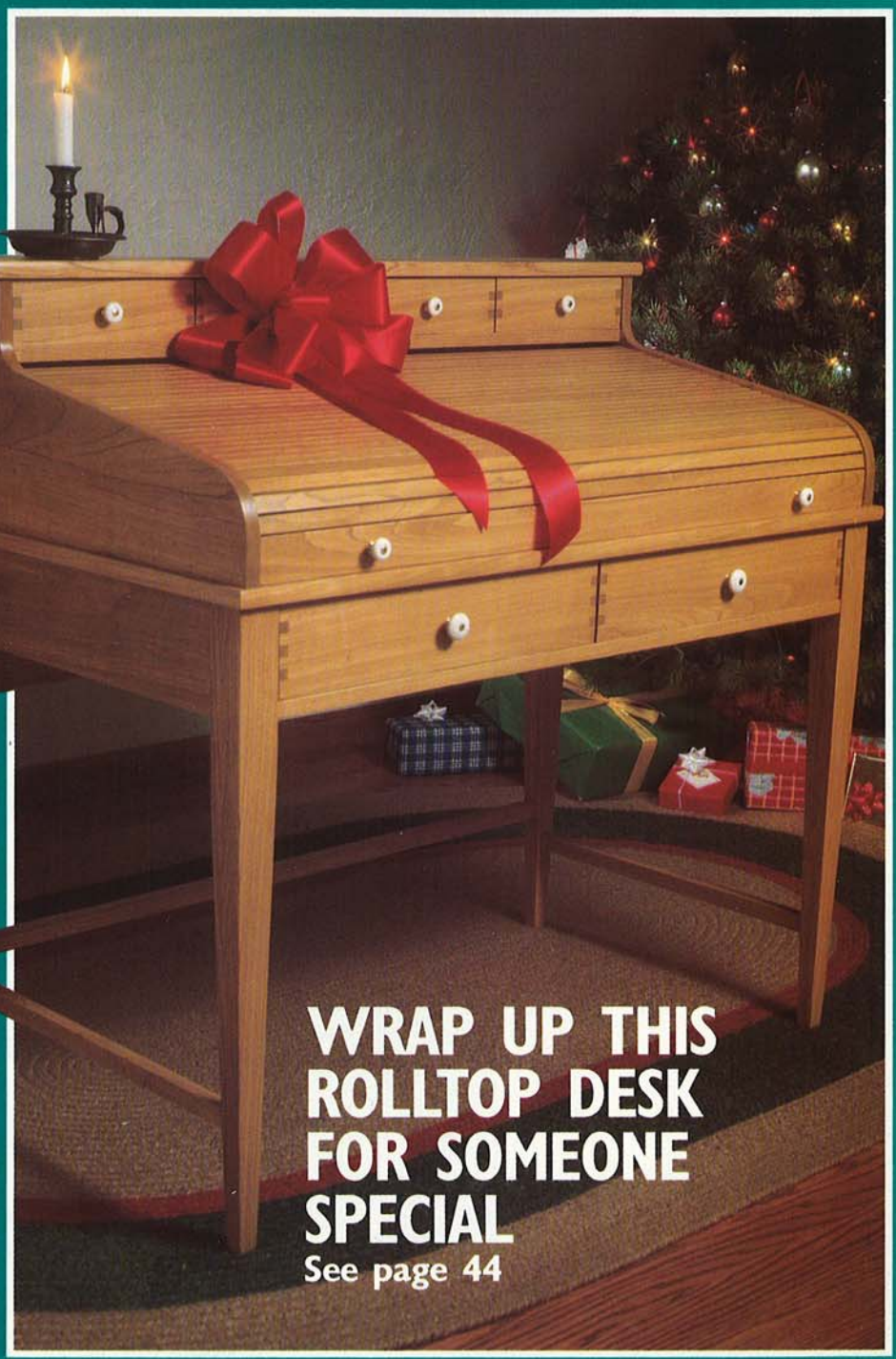

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See page 44

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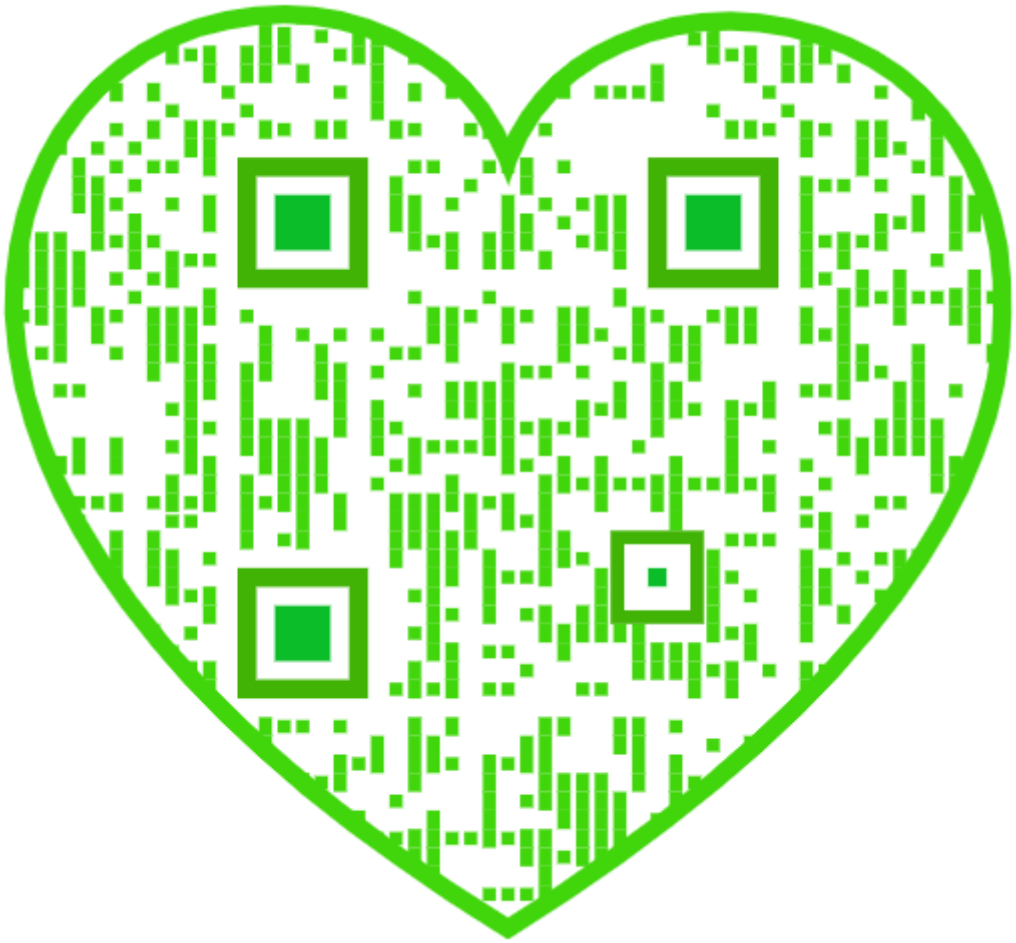

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December 1989 • Vol. 6, No. 6 • Issue No. 32

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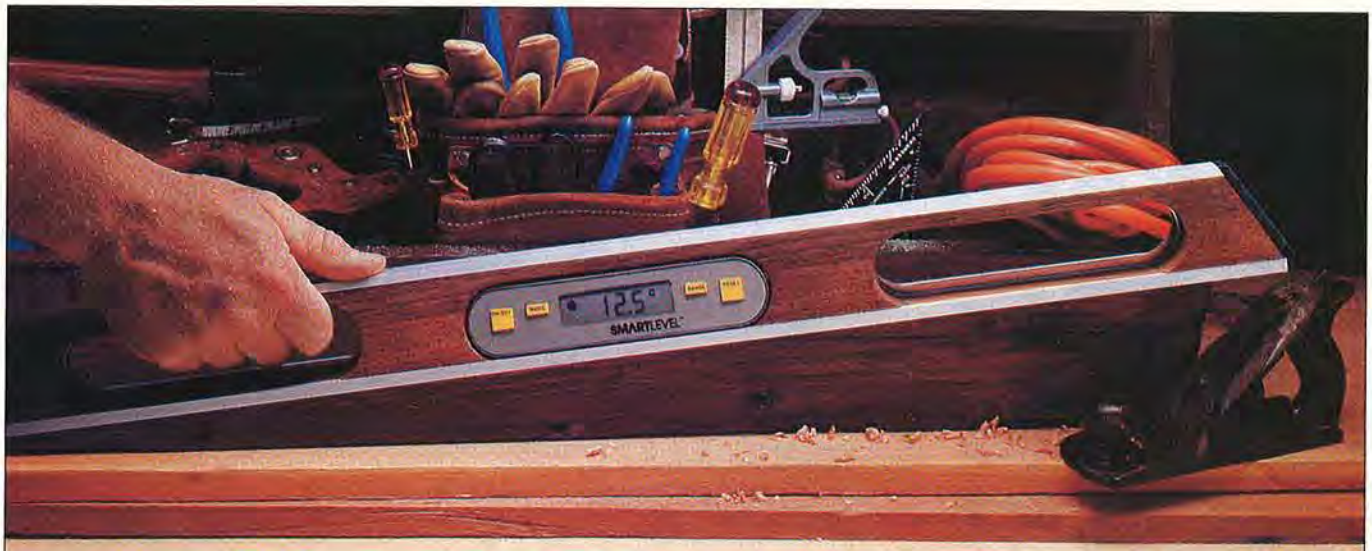

SmartLevel®—

the new, electronic hand tool that accurately measures every angle, not just level and plumb

Your old bubble level is a thing of the past, because now you can own a SmartLevel.* More than just a level, SmartLevel is a digital inclinometer that electronically measures *every angle* easily, reliably and accurately—*every time!*

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SmartLevel helps reduce costly re-work

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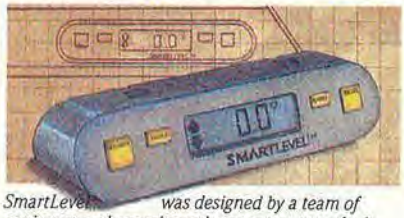
Just press the Mode button to directly measure rise over run (pitch) Δ, degree of slope °, percent of slope %, or level and plumb with, if you prefer, a simulated bubble (: III). Arrow shows direction to true level/plumb.

Plus, SmartLevel provides an exact digital display of the measurements you make, so there's no guessing. The display



SmartLevel was designed by a team of engineers and experienced carpenters to make it easy to use and to last a long time.

can be read from as far away as 10 feet, overhead or below-shoulder level, in bright or dim light. The display even "flips over" so you can still *read it when it's upside-down.*

Made of sturdy, high-quality materials for durability

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The best way to see how good a SmartLevel is, is to get your hands on one. It's available exclusively from Wedge Innovations, its manufacturer. And you may return your SmartLevel within 30 days for a full refund if you're not 100% satisfied. But we're sure you'll want to keep it—and it's backed by a one-year warranty against defects in materials and workmanship.

So order yours today. Then you can stop second-guessing your old bubble level or replacing it year after year. Because you'll have a SmartLevel—the most accurate, versatile and durable "carpenter's level" you'll ever own.

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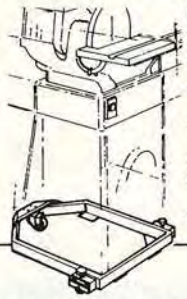

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Better Homes and Gardens®

WOOD®

THE #1 MAGAZINE FOR HOME WOODWORKERS

This issue's cover wood grain: beech

DECEMBER 1989 ISSUE NO. 32

WOOD PROFILE

CALIFORNIA LAUREL: CALL ME MYRTLE 37

Although considered a novelty wood by some, turners and other woodworkers prize California laurel—also known as myrtle—for its beauty.

SHOP-TESTED TECHNIQUES

TAMBOUR: BEAUTY AND PRACTICALITY ROLLED INTO ONE 38

Templates, routers, and simplified setups make tambour techniques easier than you've ever imagined. Join us for a shop session on how to showcase your woodworking talents.

NOW YOU CAN BUILD IT

TAMBOUR-TOPPED DESK 44

Once you've mastered tambour construction, try your hand at building our rolltop desk. You'll find lots of usable space beneath the tambour curtain and inside the desk's six drawers.

CRAFTSMAN CLOSE-UP

WITH MOTHER NATURE AS A PARTNER, JIM SHIRLEY CREATES IMAGES IN TIME 52

There's a bit of the scavenger in Jim Shirley. He's a master at gathering weathered wood and then assembling the pieces into intricate murals.

TOOL BUYMANSHIP

TABLESAWS—HOW TO BUY THE MOST IMPORTANT WOODWORKING MACHINE IN YOUR SHOP 56

You should have seen our testing area after we called in 16 tablesaws for this article. Now, you can join us as we pass along the information we gleaned while studying these essential woodworking machines.

WHAT YOU SHOULD KNOW ABOUT TOXIC WOOD 74

Perhaps you've left the shop with a stuffy nose or an unusual rash. If so, it's time you found out more about some potential troublemakers.

OUR FEARLESS WOODWORKER GOES
SHOPPING FOR BANDSAW BLADES 78
Bill Krier, our products/techniques editor, introduces a new feature to *WOOD* magazine that should help you when you buy woodworking supplies. On Bill's first shopping trip, he learned one heck of a lot.

HOLIDAY GIFT SAMPLER

CHIP OFF AN OLD CHIPPENDALE WALL MIRROR 80
Our annual gift section opens with a handsome mirror that sparkles with simplicity. We bet someone you know would proudly hang this beauty.

HARDWOOD BOOKENDS 84
Here's a project bound to please bookworms. Best of all, the bookends assemble quickly.

TABLETOP EASEL 86
Artwork and photographs have never looked better than when they're resting on this easel designed by Jim Boelling, our project builder.

ROLLING-PIN RECIPE-CARD HOLDER 89
The cooks on your gift list will appreciate this nifty holder while stirring together favorite recipes.

BARNSTORMING BIPLANE 90
Kids will love this sturdy toy reminiscent of the World War I Curtiss JN-4. It's another winner from our Design-A-Toy™ competition.

CARVE A HOLIDAY ANGEL 94
Ron Mackey shares a versatile pattern for a pin, ornament, or wall hanging.

SHORT-SUBJECT FEATURES

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THE EDITOR'S ANGLE

WE'RE INVESTING IN THE NEXT GENERATION OF WOODWORKERS

You Can Help, Too

A volunteer leader offers sanding suggestions to a 4-H member.

Over the past few years, there have been some fundamental changes in the way America's youth are being educated in woodworking. Today's curriculum centers around developing skills that allow for career opportunities later in life rather than on teaching woodworking as a pleasurable pastime.

There's also been a not-too-gradual shift away from woodworking and many of the other industrial arts toward computer education. While these changes may be necessary, we think that woodworking is much more than a career opportunity.

And fortunately, so does the 4-H Cooperative Extension System Council. Each year, more than 100,000 children from ages 9–19 participate in the 4-H Wood Science Program. In this program young people learn by doing. They work on projects they choose for themselves, submit their projects for exhibition and judging, and compete for awards at the county, state, and national levels. Each participant acquires personal skills, satisfaction, and pride in his or her accomplishment. We think all of these things are important—especially today.

And, that's why we have joined forces with the National 4-H Council and the fine *WOOD* magazine advertisers listed on page 105 to sponsor the 1990 Wood Science Awards Program. Our $31,000 contribution will help to underwrite the efforts of this fine program and hopefully instill a healthy interest in woodworking among this country's next generation of home-woodworking hobbyists.

How can you help? Just haul out your telephone directory and look up the number of your county extension office. Ask to talk with the person assigned to the 4-H, and that person will be more than happy to fill you in. You can be of help in one of two ways. You can either volunteer to work directly with a small group of 4-H children or serve as a county project leader in which capacity you would help organize a group of volunteer leaders. Either way, you'll be doing a good deed that will help preserve woodworking's rich heritage.

Print this article

Larry Clayton

BOSCH

Woodworking

Bore Cleanly: Forstner Bit Kits.

For superbly clean, flat-bottom holes in wood, nothing surpasses these fine Forstner bits. Forged of chrome vanadium alloy steel, they slice through end grain and knots without deflecting. Bosch offers two kits in custom wooden boxes: 7 bits, ¼″ through 1″; 16 bits, ¼″ through 2⅛″.

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Sander Features Exclusive Belt Tracking/Tensioning.

Model 1273 and companion models have unique belt centering system. Rated super-duty for high production, the unit also has pinch point guards for safety and lever action for easier belt changes.

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TALKING BACK

We welcome comments, criticisms, suggestions, and even an occasional compliment. The volume of mail we receive makes it challenging to answer every letter, but we promise to do our best. Send your correspondence to: Letters Editor, Better Homes and Gardens® WOOD® Magazine, P.O. Box 11454, Des Moines, IA 50336-1454.

THE VIRTUES OF GARDEN SAWDUST

You published a letter in the June 1989 issue from a reader requesting information regarding the use of sawdust as a garden additive. I would like to add to your response to say that fine sawdust *and* wood chips provide an excellent additive to the soil, especially in dry or hot climates.

The fine wood product added to the soil provides the same moisture-holding effect as peat. As the wood decays, it adds humus to the soil. You may add sawdust between rows as a mulch to retain moisture. However, in addition to the nitrogen fertilizer you recommended, you should add lime to the soil because of the high acid content of wood products. For plants or shrubs that require an acid soil, the wood product provides excellent acid-building agent.

For gardens, I recommend tilling the sawdust into the soil, which helps blend the soil and sawdust. As an added tip, till wood ashes into the soil as a valuable source of potash.

—John Wolfe, Oakland, Md.

WHAT ABOUT THOSE ROUTER SPEED REDUCERS?

I recently purchased a Makita ½" plunge router to use with rail-and-stile cutters, panel-raising bits, and other large router bits. The June 1989 issue of *WOOD* magazine featured a review of a speed reducer in the "Products That Perform" department. The article suggests that the MLCS speed controller may be used with any AC/DC router, but does not indicate that a controller may damage a router if it runs at slow speeds.

Also, local router outlets claim that speed reduction on large bits isn't necessary for safe operation. In fact, the local Freud dealer claims that large bits are designed to run at fixed speeds.

I'd like some help at sorting all this out.

—John Calver, London, Ontario

John, we first talked with Roy Thompson from Makita. "If the controller reduces speed by reducing volt age to the tool," Roy says, "then using it would be

Continued on page 10

Print this article

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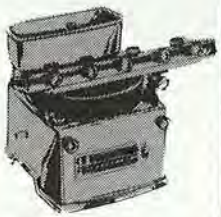

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TALKING BACK

Continued from page 8

harmful to the machine. I would say that anything that drops voltage by more than 10 percent to a universal tool can damage it." Why? "According to Ohm's law, if resistance in a tool remains constant (which it does, of course) then there must be an increase in amperage when voltage drops. An increase in amperage causes the tool to overheat (amps equal heat in a universal motor), which damages it."

Roy likened this drop in voltage to that which occurs when you use an extension cord that's too long or too thin. "The resistance of the cord starves the tool of voltage, which can damage it," he adds.

Bill Goldman, a vice president at MLCS, responds that his firm's speed reducer uses an electronic feedback loop that converts AC current to DC and then rapidly turns the router on and off. "It's not a rheostat (a voltage reducer) like an ordinary dimmer switch—that would burn out a router. Our voltage control can be used with any router, or any tool with a universal motor for that matter.

"It will heat up some, but there's no problem using it for 20 or 30 minutes at a time—most of our customers aren't production workers who would use it for continuous periods longer than that."

Bill says the MLCS control basically operates the same way as variable speed units incorporated in some routers. "It's not quite like the Porter-Cable control," he says, "but it's similar to the control in the Elu and Ryobi routers, for example."

John Nichols, Porter-Cable's technical services manager, agrees that speed reducers "can be used in light applications, with a router that's too big for the job, if the operator is careful. A voltage drop equals an increase in amps, and extra amps heat up the motor—all at a time when the fan is slowing down.

"Porter-Cable's model 518 variable speed router relies on a sophisticated switching system that turns the motor on and off very rapidly."

As for safely operating hefty bits, Jim Boelling, our project builder, suggests reducing the router speed when running router bits 1½" diameter or larger.

LOW-COST OPTION FOR OUTDOOR LIGHT CIRCUITRY

For woodworkers who know their way around cars, too, Tom Reigle of Carlyle, Illinois, suggests that automotive back-up lights work well for low-voltage applications. To build the outdoor lights featured in our June 1989 issue, Tom scrounged his sockets at a salvage yard and fastened the lights together with 3M Scotchlock connectors. He then wired his lights to a timer/transformer left over from a set of broken plastic outdoor lights. After completing his yard lights, two friends insisted that he build sets for them, too. "That's one of the joys of woodworking," Tom says.

Continued on page 12

How to improve your home without a home improvement loan.

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TALKING BACK

Continued from page 10

WATCH WHERE YOU BLOW SAWDUST

Over the years, I've looked forward to the many helpful woodworking tips appearing in *WOOD* magazine. However, every now and then I come across an item that causes me to wonder why some writers do things in the manner they describe.

One such procedure that I thought the editors at *WOOD* magazine should have picked up prior to publication was that described in the T. C. MacMichael wood-finishing feature in the April 1989 issue. In the step-by-step column, he mentions how he gets rid of sanding dust by blowing it off with compressed air.

As an industrial hygienist who has seen the sad consequence of prolonged inhalation of atmospheric wood dust by workers, I cringe when I read of an experienced professional practicing such a dumb habit. I am adamant in my conviction that there is only one satisfactory way to remove sanding dust from any source: vacuuming it and following up with a tack cloth.

I'm also convinced that the editors of *WOOD* magazine and similar magazines owe it as a service to carefully monitor submitted articles for practices that are physically dangerous or impose potential inhalation damage.

—Louis Faenza, Franklin, Mass.

Thanks for the input. As a policy, we do not force the use of safety equipment or safe procedures on the woodworkers we interview. However, our article should have included an editor's note suggesting a better solution to remove the dust safely.

MORE MOBILES! MORE MOBILES!

I need your help. Could you please give me information on where to get more patterns of birds in flight like the parrot you published in the June 1989 issue?

—William East, Sulphur, La.

Wow! Those parrot patterns have been popular, Bill, and you're not the only reader to ask for plans for additional mobiles. Check out the catalog offered by Timbers Woodworking, Timbers Building, Carnelian Bay, CA 95711. Their catalog shows 12 different mobiles. For phone orders, call 916/581-4141. Or, try Meisel Hardware Specialties, P.O. Box 70, Mound, MN 55364-0070. Call 612/471-8550 for their latest catalog with four designs.

Continued on page 15

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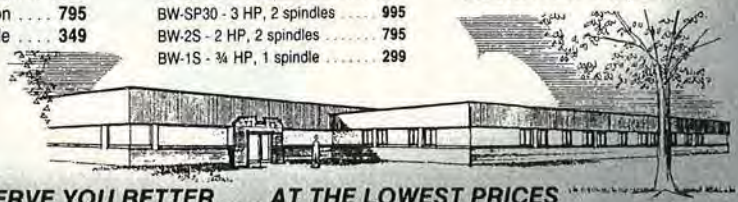

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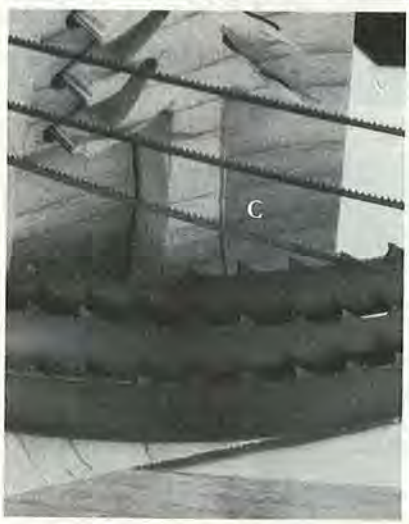

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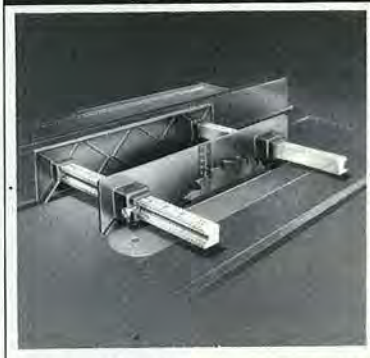

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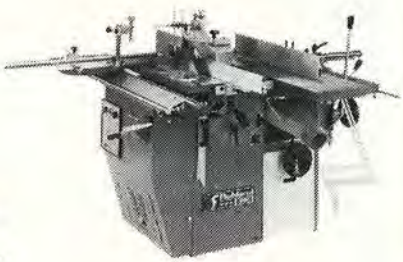

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TALKING BACK

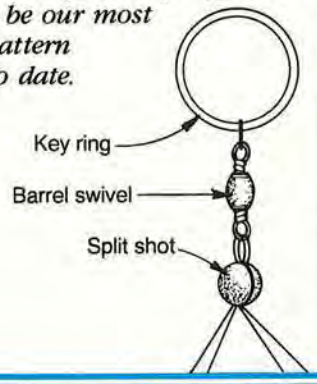
Continued from page 12

GET UNDER THE BARREL

Here's a suggestion for the parrot mobile: The addition of a brass barrel swivel between the key ring and split shot will go a long way to prevent line from twisting. Most fishing-supply stores stock swivels with eyes from approximately 1/32" to 1/4" in diameter.

—Randy Reynolds, Ashdown, Ark.

Thanks, Randy. This should be a big boost to the flock of mobile builders. The parrot project has proven to be our most popular pattern offering to date.



MORE INFORMATION TO BUILD SHAKER CHAIRS

Because of an oversight, we omitted a reference mark for drilling the front legs of the Shaker chair shown in the August 1989 issue of *WOOD* magazine. For a revision of the dowel clamp and drilling guide, write: Shaker Chair, *WOOD* Magazine, P.O. Box 11454, Des Moines, IA 50336-1454.

LOVE THAT ROSCOE

This is a super raccoon carving and instruction. Thanks for all the good information, and I hope you can continue to have good carving lessons and offer rough-outs.

—Glen W. Lewis, Coffeyville, Kan.

I enjoy your magazine very much. I have been a wood carver for 10 years, and I subscribe to about eight carving periodicals and have purchased about 50 books on wood carving. Desiree Hajny's article in the June 1989 issue of *WOOD* magazine is one of the best I have ever seen.

—John Gardner, Leonia, N.J.

Thank you for this great opportunity to participate in wood carving. This is something I have always wanted to do.

—Harold Card, Monrovia, Calif.

I really enjoyed your article on Desiree Hajny, as I will be attending a seminar she is giving in Rochester.

—Don Merkel, Rochester, Minn.

We had a sneaky suspicion WOOD *magazine readers would hit it off well with Desiree and her carvings. Since the article appeared, Desiree won first-place ribbons in two classes and in two large divisions at the 1989 International Wood Carvers Congress.*

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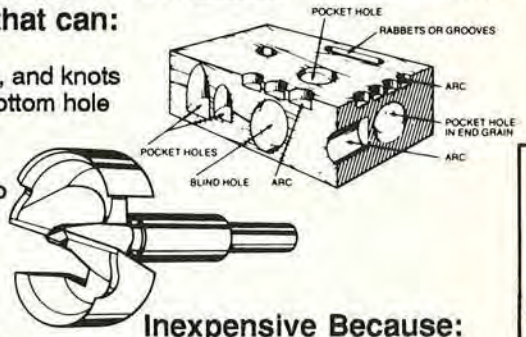

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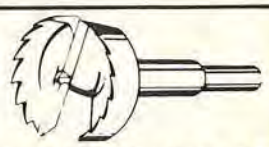

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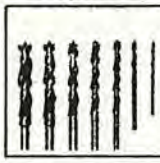

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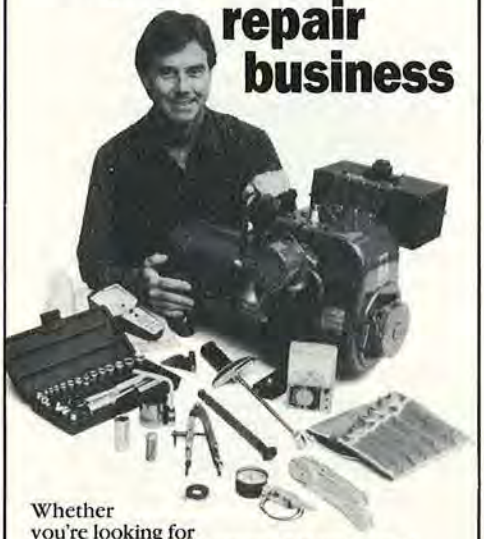

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Last year, *WOOD* magazine readers sent more than 400 toys in response to our first-ever Design-A-Toy™ contest. This year, we changed the contest name to Build-A-Toy™, altered the rules a bit, and set a goal to collect 2,500 toys. We still have a design contest—just like last year's hit competition. But, we've added a merchandise drawing for all the woodworkers who feel more comfortable building toys from plans and for those not winning prizes in the design contest. The more toys you send, the better your chances to win.

We encourage all woodworkers—whether you design your own toys or build from project plans—to enter *WOOD*® magazine's 1990 Build-A-Toy competition. The U.S. Marine Corps Reserve, through their Toys for Tots program, will again distribute the toys to deserving children.

As an extra incentive, the first 1,500 entrants will receive a Vermont American Iso-Temp-Claw power screw-driving bit and a Starrett 3′ pocket tape measure.

Thanks in advance for putting a sparkle in a child's eye!

PRIZES

DIVISIONS	Student (K-12)	Home Hobbyist	Professional
Grand prize: $1,500 in merchandise from	Black & Decker	Delta	Freud
First place: $500 in merchandise from	Total Shop	Jet	Bosch
First runner-up: $250 in merchandise from	Grizzly	Leichtung	Dremel
Second runner-up: $100 in merchandise from	American Tool Cos.	Industrial Abrasives	Santa Rosa Tools

Judges will award these special citations:
Best professional finish: $1,000 in Minwax merchandise
Best home-hobbyist finish: $1,000 in Deft merchandise
Best use of router: $1,000 in Porter-Cable merchandise
Best use of wood: Kity K-5 from Farris Machinery ($1,895 value)
Best painted finish: $1,000 in Red Devil paints and stains
Best truck: Makita Maxi-Shop ($600 value)
Best car: $1,500 in merchandise from Foley-Belsaw
Best pull toy: Shopsmith Power Station with bandsaw, jointer, strip sander, belt sander, disc sander, and casters ($1650 value)
All design winners will receive a pocket hacksaw, valued at $7.75, from Olson Saw

RANDOM DRAWING:
AEG $250 in merchandise • **Acme Electric** (The Tool Crib) 1-hp Elu router ($250) • **American Machine and Tool** carving set model A862 ($55) • **Albert Constantine and Son** $200 hardwood package • **DML** five 10″ carbide-tipped blades ($87 each) • **Fabulon Gel-Eze Stains** thirty stain kits ($20 each) • **Fisher-Hill Products** three Ripstrates ($75 each) • **Franklin International** 10 Titebond gluing kits ($10 each) • **How-To Book Clubs** five book club memberships ($100 each) • **Lobo** five portable belt sanders ($99 each) • **MLCS** 8-piece craftsman router bit set ($126) • **Meisel Hardware** ten $25 gift certificates • **Milwaukee Electric** 4″ belt sander with bag ($348) • **Nova Tools** branding iron ($26) • **Olson Saw** two carbide-tipped saw blades ($80 each) • **Penn State** Super 15 scrollsaw ($130) • **RB Industries** 14″ scrollsaw ($550) • **Rodale Books** *Build It Better Yourself* woodworking books ($75) • **Skil** plunge router model 183502 and accessories ($250) • **Thompson-Formby** five $100 Formby gift sets • **Vaughn & Bushnell** ten handyman utility packs ($29 each) • **Wilke Machinery** Bridgewood model BW12P 12″ planer ($399) • **Williams Tools** Black & Decker cordless jigsaw 3140 ($250) • **The Woodworkers Store** $50 gift certificate • **Woodworkers Supply of New Mexico** Matchmaker jointer ($549) • **The Woodworks** two $25 gift certificates

1990 RULES

1. Make projects no larger than 2×2×2′. The primary material should be wood, but may incorporate other materials.
2. Please follow Consumer Product Safety Commission guidelines: Nontoxic wood finishes only; no parts smaller than 1¼″ square on toys for children under 3 years of age; no sharp corners or points; pull strings longer than 12″ should not have beads or other attachments that could tangle and form a loop.
3. **No purchase necessary.** Complete an entry form, photocopy an entry form, or print Build-A-Toy at the top of a 3×5″ card with your name, address, daytime phone number, and division. Mail with the toy to: Build-A-Toy, *WOOD* Magazine, 1912 Grand Ave., Des Moines, IA 50309.
4. Those not winning prizes and woodworkers who build toys from plans are eligible for a Random Drawing. For each toy received, your name will be entered once. Without a toy, you may enter the Random Drawing by completing the entry form described in Rule 3. Chances of winning depend on the total number of entries received. Meredith Corporation, whose decision is final, will supervise the Random Drawing.
5. Entries must be received by February 1, 1990. All entries must be postpaid; collect entries will be refused. Attach an entry label to each toy.
6. Entry constitutes permission to use winner's name and photograph for promotional purposes. Employees and family members of Meredith Corporation, their affiliates and subsidiaries are ineligible.
7. The first 1,500 entrants will receive a 3′ Starrett pocket rule ($3 value) and Vermont American Iso-Temp-Claw power screw-driving bit ($3 value). Canadian entrants, as required by law, must answer the skill-testing question on the entry label. All federal, state, provincial, and local laws apply. Void where prohibited. Contest and Drawing void in Quebec.
8. Winners will be selected and notified by mail on or about April 15, 1990, and will receive the prize directly from the manufacturer/distributor. For a list of winners, send a separate, self-addressed stamped envelope to Build-A-Toy, P.O. Box 11454, Des Moines, IA 50336-1454.
9. Meredith Corporation will donate all entries to the U.S. Marine Corps Reserve Toys for Tots program.

These additional rules apply only to the design contest:

10. Toys must be your original design. A different approach to an existing toy would qualify. Please, do not not enter toys with only subtle changes from published patterns.
11. A panel comprised of representatives from the U.S. Marine Corps Reserve, Meredith Corporation, and woodworking experts will judge the toys on child appeal, craftmanship, originality, and durability. The panel's decision will be final.
12. Professional woodworkers include woodworking teachers and anyone earning income by selling wooden items.

BUILD 'A-TOY

☐ Give this toy to Toys for Tots and enter my name in the drawing.

☐ Before you donate my toy to Toys for Tots, please enter this toy in the design competition.

Name _____

Phone _____

Address (Home)_____ (Work)_____

City _____

State _____ Zip: _____

Student ☐ Home Hobbyist ☐ Professional ☐

Canadian woodworkers: Walnut is a hardwood. True False

Design competitors only: I certify that I have designed and built this toy myself. Should my entry win, I agree to cooperate with *WOOD* magazine in supplying builder's notes and a bill of materials for publication.

Signature _____ Date _____

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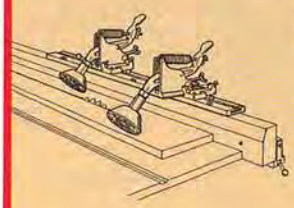

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EARN CASH, PRIZES FOR YOUR TOP SHOP TIP

Do you have a great shop tip (or two) you'd like to share with other *WOOD*® magazine readers? For each published submission, you get:

- $25 from *WOOD* magazine.
- A $25 gift certificate. Winners in this issue choose merchandise from the Leichtung Workshops mailorder catalog shown at *right.*
- And, a chance to win a woodworking power tool or accessories for submitting the top shop tip.

We try not to use shop tips that have run in other publications, so please send your tip to only one magazine. We cannot return shop tips. Mail your tips, address, and daytime phone number to:

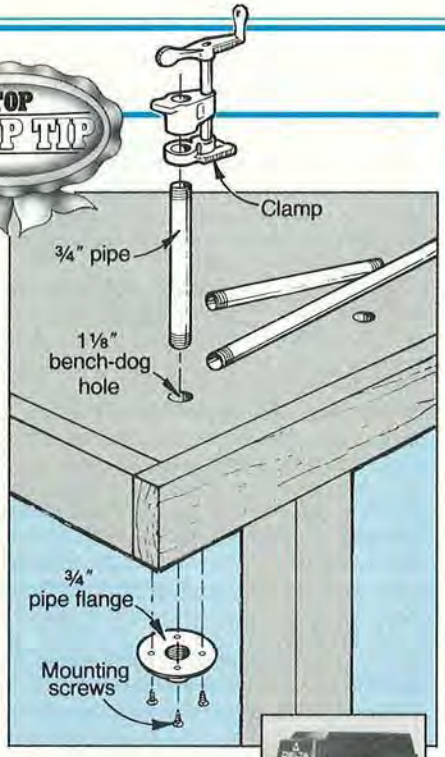
Top Shop Tip
Better Homes and Gardens®
***WOOD*® Magazine**
P.O. Box 11454
Des Moines, IA 50336-1454

A BENCH HOLD-DOWN ANYONE CAN AFFORD

European-made woodworking benches typically include metal bench dogs and other devices for securing workpieces in place for sanding, carving, and other operations. There's no question they're desirable, but their cost puts such niceties out of reach for many of us.

TIP: Tailor-make hold-downs for your bench by calling one or more of your ¾" pipe clamps into double duty. At suitable intervals (we spaced ours 1' apart in two rows 1' apart along the front of a bench), bore 1⅛" holes through the surface of your bench. Then, screw pipe flanges in place underneath as shown at *right.* Thread a length of pipe into the flange, add the clamp, and you have an inexpensive hold-down. To accommodate a variety of stock thicknesses, buy varying lengths of pipe.

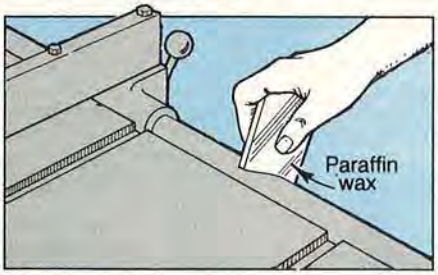
—Tom Koenig, Easton, Mo.



For sending the Top Shop Tip, Tom receives the Delta model 11-950 drill press shown at *right.*

PARAFFIN HELPS RIP FENCE GLIDE SMOOTHLY

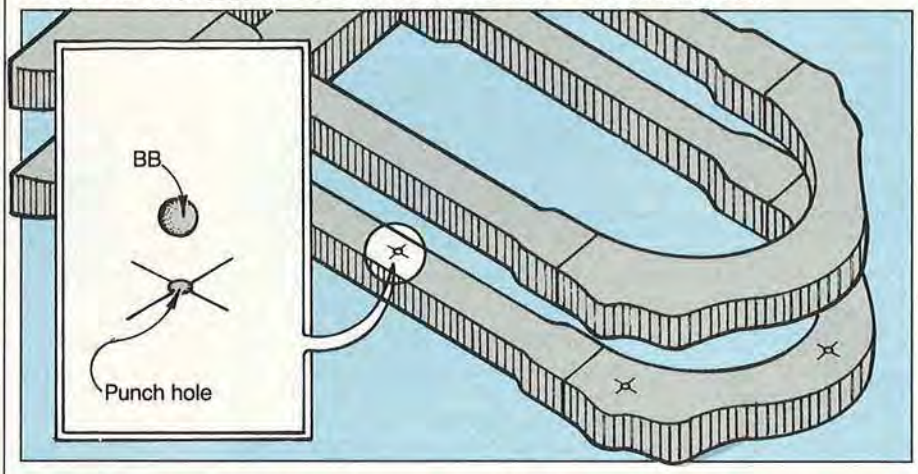
The metal parts of a ripping fence and the rail on which it rides can stick, making it difficult to position the fence exactly as you want.



TIP: Rub a paraffin bar along the rail as shown *above* to apply a thin coat of wax, which allows the fence to glide smoothly along the rail. You can purchase paraffin at most grocery stores.

—From the* WOOD *magazine shop

BBs HIT BULLSEYE FOR DOWEL-HOLE PLACEMENT



Precisely locating dowel holes in matching pieces that have unusual shapes will help you produce a properly fitted project. Here's a method that's quicker and just as accurate as the method using small nails described in the quilt rack project featured in the February 1987 issue of WOOD *magazine.*

TIP: First, mark the centerpoints of the dowels with an awl. Then, tap BBs slightly into each awl mark. Place the corresponding curved top piece precisely on top of the first one and tap with a rubber mallet. When you separate the two wood pieces, the BBs will make dowel centermarks that match exactly.

—Bernard Paumier, Baltimore, Ohio

Continued on page 22

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Editor, Workbench Magazine

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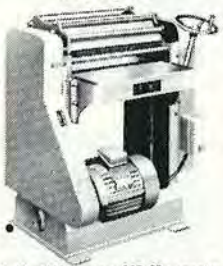

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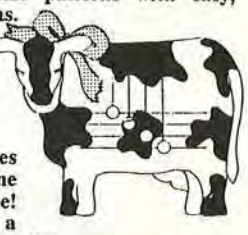

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TIPS FROM YOUR SHOP (AND OURS)

Continued from page 18

END THE SEARCH FOR GLUE-BOTTLE CAPS

All too often, the original cap that's supposed to seal a glue bottle vanishes from your workshop. Before you know it, your bottle spout plugs up with dried glue.

TIP: Electrical connectors (wire nuts), normally used to fasten and insulate electrical wires, also make excellent caps for glue bottles. Their large size and loud colors make them easy to find and keep on the bottle.

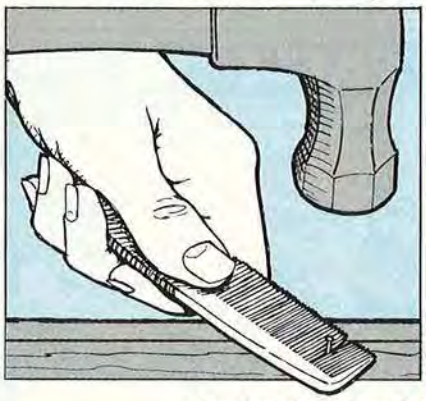
—Fred A. Race, Euclid, Ohio

USE A COMB TO HAMMER YOUR NAILS—AND NOT YOUR FINGERS

Anytime you drive small brads and tiny nails, you run the risk of hitting the wrong nail—your fingernail. Ouch!

TIP: An everyday pocket comb does a nice job of holding those little fasteners, especially nonferrous nails and brads that ignore the grip of magnetic holders.

—Frank A. Erdt, Gum Spring, Va.



Continued on page 24

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TIPS FROM YOUR SHOP (AND OURS)

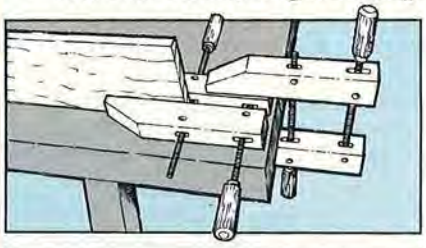
Continued from page 22

HANDSCREWS MAKE THE BEST OF 'EDGY' WORK SITUATIONS

Although a woodworking vise will hold small pieces of stock on edge, some unwieldly jobs such as planing an edge or *drilling holes into the face of an edge dwarf a vise. The vise cannot provide the kind of support you need—especially for long boards.*

TIP: Use a pair of large handscrews to hold each end of a workpiece in place on top of your bench as shown *below.* Start by securing one clamp to the bench. Then, follow these two steps for tightening the clamp holding the workpiece: First, adjust the screw nearest the stock to the thickness of the board. Second, with the clamp jaws parallel, tighten the other screw to secure the board.

—From the* WOOD® *magazine shop

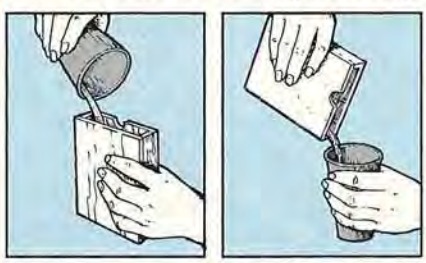


POUR AN INSIDE FINISH

Sometimes, it's impossible to use paintbrushes to apply finishes to the inside of small hollow objects such as vases.

TIP: Often, it's easier and more effective to pour finish into the hollow article, turn and tilt to coat all surfaces adequately, and then pour out the finishing material. Be sure to invert the piece long enough to drain completely.

—From the* WOOD *magazine shop



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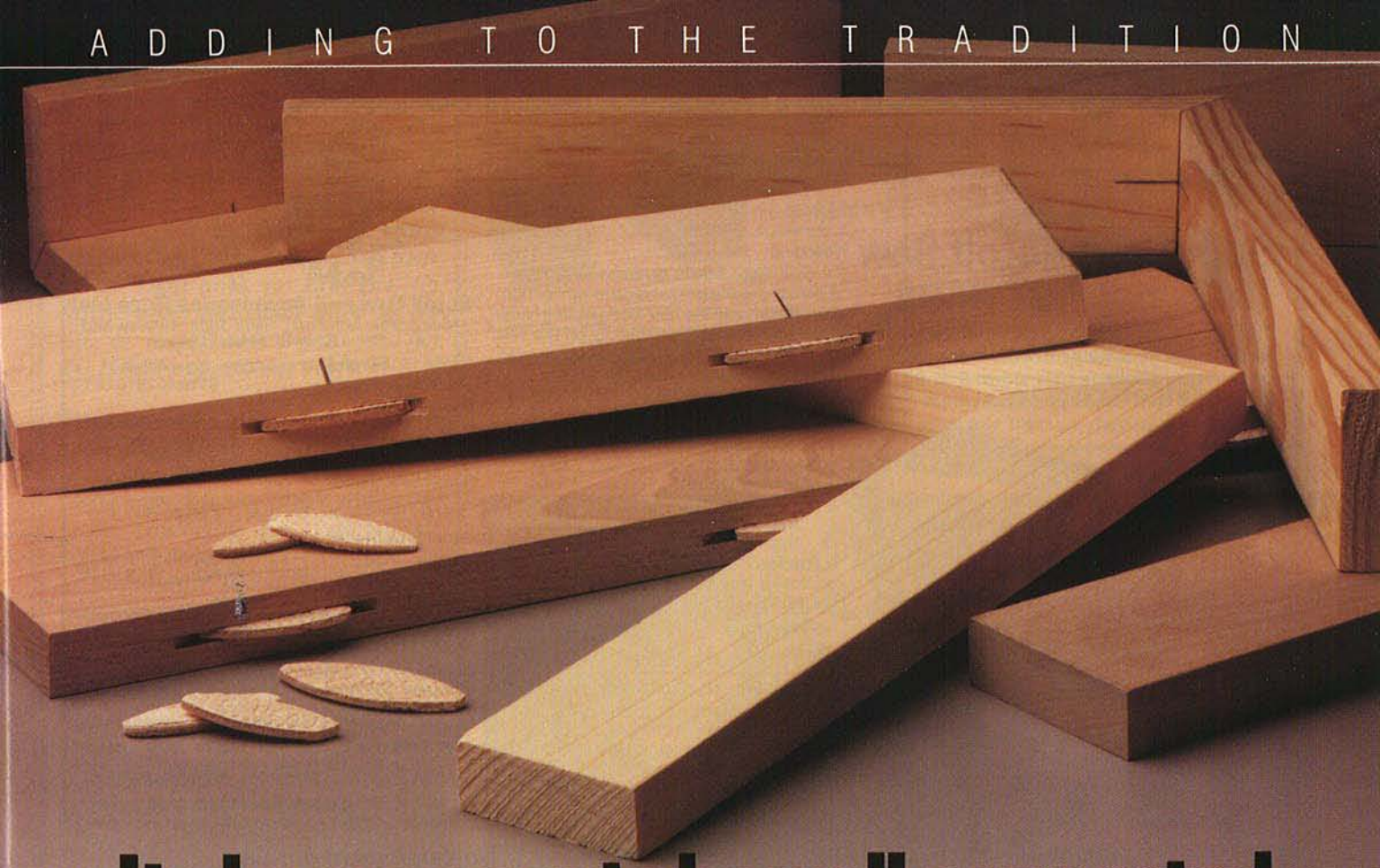

It always pays to be well-connected. In this case it pays a hundred bucks.

The new Delta Plate Joiner. Bolt one of these babies to your bench between now and the New Year and Delta will send you a check for 100 bucks. That'll buy a lot of biscuits for all the great connections you'll be making. Because once you've worked with our new stationary Plate Joiner you'll never want to be without it.

This one puts an end to the dowel-joint struggle. And it takes biscuit joining a giant step beyond anything you can imagine with a portable joiner.

A foot pedal controls blade movement, so both hands are free to control your work. You can handle edge, face, bevel edge, bevel end and miter joining, as well as Tee-molding with all three standard biscuit sizes.

The table raises and lowers to handle large workpieces. And it's slotted to accommodate an adjustable stock-stop for edge or miter joining. An auxiliary table swings into place for bevel joining.

If you're ready to make some great new connections, call toll free for the name of your participating Delta Distributor. Delta International Machinery Corp., 800/438-2486 (in PA 800/438-2487).

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Cut intricate wood patterns easily with this versatile machine. ***Many extras*, including:**

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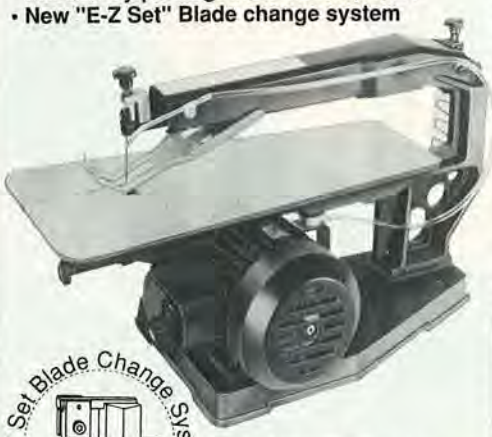

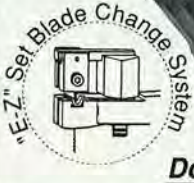

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- **Max depth of cut** ..... 2"
- **Machine weight** ..... 43 lbs
- **Motor** - Heavy duty totally enclosed fan cooled 110-120V, UL listed, ball bearing induction motor
- **Blades** - uses 5" standard & pinend
- **Stroke length** ..... 3/4"
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Options: Dust Blower & Saw Stand

Free with Purchase of Saw

- *12 Blade Assortment* ..... **$ 3.50 value**
- *Extra Std. Blade Holder set*.... **8.50 value**
- *E-Z Set blade change system*..**15.00 value**
- *Neptune 1-1/2" plastic Lettering guide set & patterns*..... **25.00 value**

***FREE* ... $52.00 VALUE**

Scroll Saw and Accessories Price List

(Compatible with Penn State Super 15" Saw and Scroll Saws of similar design)

Super 15" Scroll Saw - complete & assembled
#SAW..... **$119.95** ($10 UPS)

Dust Blower
Keeps your pattern line visible at all times, Our most popular accessory. Installation instructions included.
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#BPS - 2 dz Spiral blades (size #2) .....**$ 10.00** (•)

"E-Z Set" Blade Change System
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Foot Switch
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(•) No freight chg if ordered with Saw, $3.00 for any combination of these accessories ordered separately

Don't settle for less from importers selling stripped down versions of our Saw

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On Sale ... $349.95

Add $15 UPS Freight

This machine will pay for itself time and again by planing your own lumber. At 65 lbs, you can carry this Planer to a job site or mount it permanently in your workshop like any stationary machine. **You'll spend hundreds of dollars less** for this 12-1/2" power feed Planer than for a traditional stationary model of a similar capacity - with comparable results.

SPECIFICATIONS:

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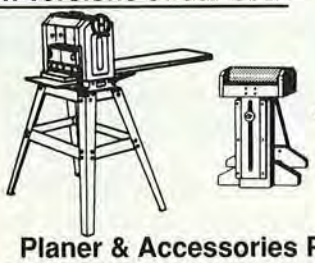
- **Motor** - 16 Amp, 115V, 8000 RPM
- **Auto Feed rate** ..... 26.2 FPM
- **Cutting speed** ..... 16000 Cuts/min
- **Thickness of stock** ..... 3/16" to 6"
- **Size** ... 15-1/2"H X 22"W X 21" Bed
- **Max Depth of cut** ..... 1/8"



***Free** plans for roller stand with purchase of rollers*

Planer & Accessories Price List

Super 125 Planer - complete and assembled
#PLA ..... **$ 349.95** ($15 UPS)

Extra Set of 2 Knives - High speed steel, 12-12"
#PKN ..... **$ 25.00/set** (•)

Dust chute - for vacuum takeoff of wood chips
#PDS ..... **$ 24.00** ($3 UPS)

Planer stand - Heavy duty, 27-1/2" high
#PST ..reg. $44.00, **On Sale**..... **$ 39.00** ($6 UPS)

Ball Bearing Rollers - (Minimum purchase 2 rollers) Build a roller stand, infeed/outfeed table etc. with these 13" X 2" Heavy Duty rollers. Purchase includes FREE plans for building the roller stand shown above.
#BBR ..... **$ 6.50/ea** ($3 UPS/per order)

(•) No frt chg if ordered w/Planer, otherwise add $3 UPS

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TIPS FROM YOUR SHOP (AND OURS)

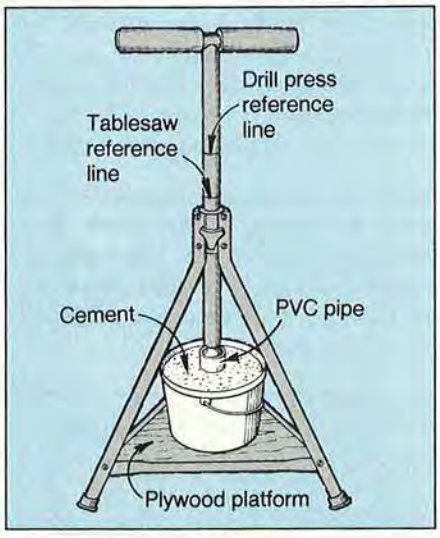
Continued from page 24

HOW TO IMPROVE YOUR WORK SUPPORT

Surely one of the handiest helpers in a shop is the adjustable work support. But, they do have their faults. Light ones, for example, tip easily. And, you often have to try two or three times before you get the height adjustment correct.

TIP: Stabilize those lightweight work supports by adding ballast in a 2-gallon ice cream container or small paint bucket filled with concrete. Lowering the center shaft into a short length of PVC pipe set in the middle keeps the weight in place on its plywood platform (see drawing *below*). To quickly adjust the height for specific tools, score lines on the center shaft and, if you like, make masking-tape labels to remind you what the lines mean.

—John Rojeski, Denham Springs, La.



MORE TIPS FROM OUR WOODWORKING PROS

You'll find other handy shop tips in this issue of *WOOD* magazine:

- Add non-skid feet to your projects by filling counterbores with a bit of flexible silicone. See our bookends project on page 85.
- See our easel project on page 88 for a way to make wooden hinges.
- We've devised an easy-to-make drill guide that helps you drill several holes at the same angle. Take a flight over to our biplane project on page 90.

FULL-SIZE FURNITURE PLAN ROLL-TOP DESK

CATALOG 200 full-size professional furniture plans — $3.00

Authentic double pedestal desk, 30" deep, 52" wide, 30" high. Roll-Top Unit adds 14" to height. Both single curve and double curve full-size profiles included.

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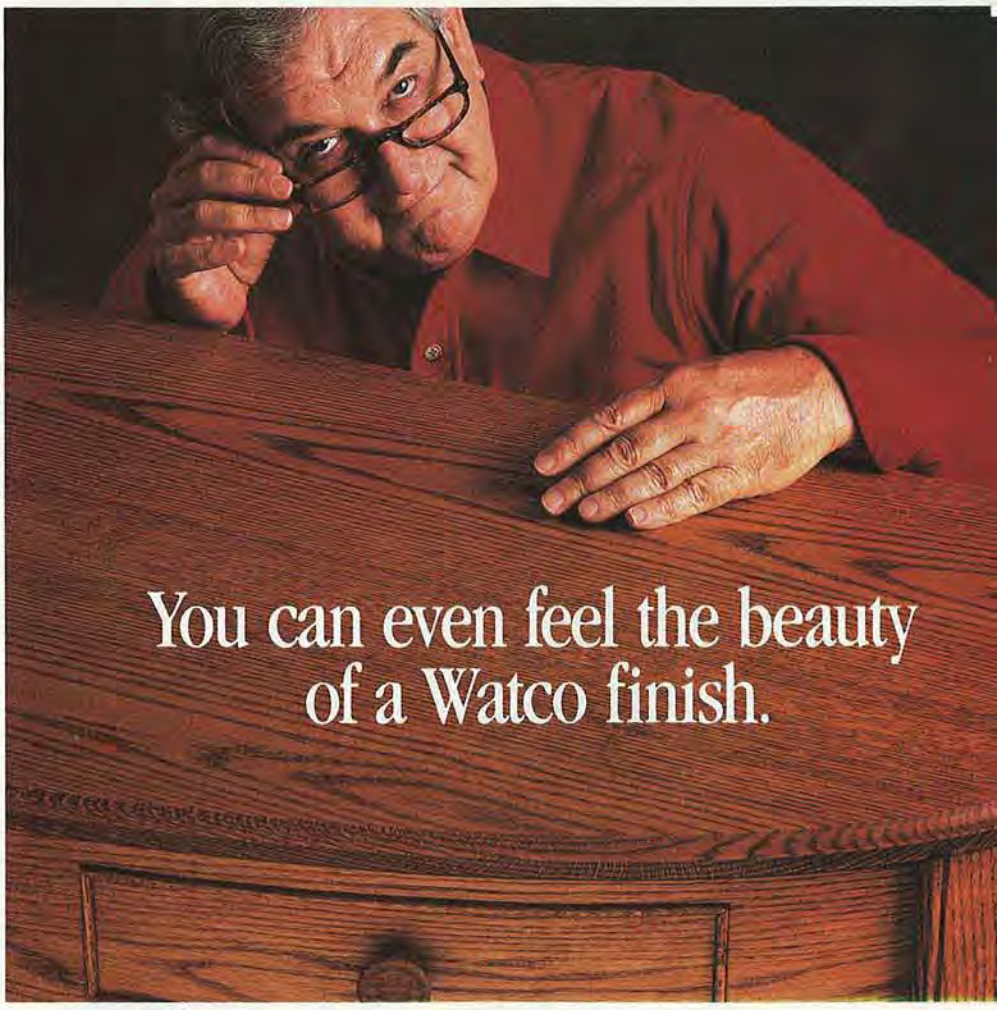

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Like glue, it locks up the joint tightly. Unlike glue, Chair-Loc leaves the joint slightly flexible. The red-tinted clear liquid expands wood fibers, then deposits a solid substance in the fibers to retain the swollen shape. It works in 15 to 30 minutes. Remember to use Chair-Loc only on relatively well-fitting joints. For really loose dowels, or those with missing material, an epoxy is still your best bet for a gap-filling, rock-solid repair.

—Tested by Steve Oswalt

Chair-Loc, available nationwide in many hardware, home-center, and woodworking stores, and woodworking catalogs at less than $3 for a 2-oz. bottle and less than $4 for a 3-oz. container.

Continued on page 34

Total Shop

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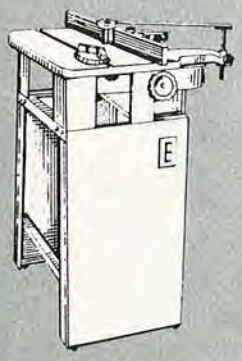

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- Cast iron construction
- Precision fence
- 160 lbs.
- Ball bearings

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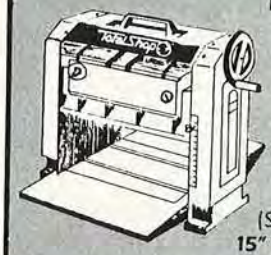

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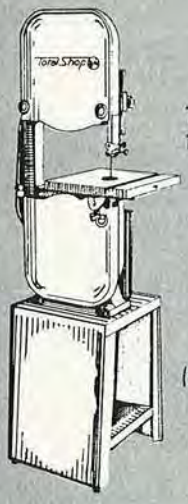

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14" Bandsaw
- Blade size up to ¾" wide
- Cast iron construction
- 180 lbs.
- ¾-hp

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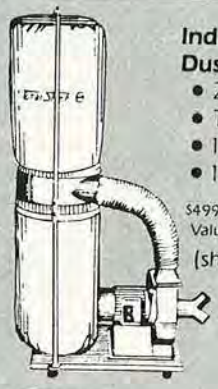

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- 2 hp, 110v
- Two 4" inlets
- 1185 CFM
- 125 lbs.

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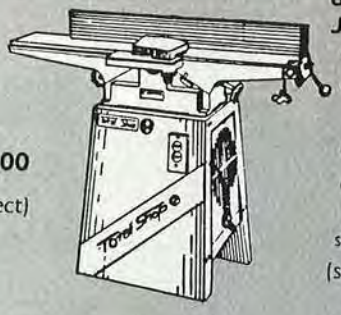

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- Fence tilts 45° both ways.
- Fully adjustable
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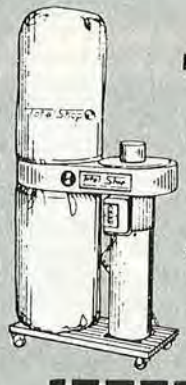

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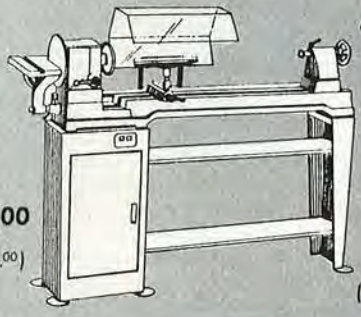

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- 290 lbs.
- Cast iron construction

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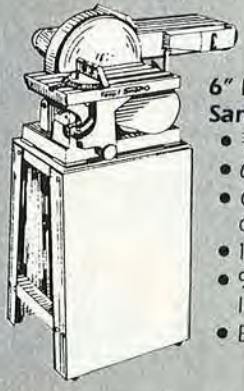

6" Belt & 9" Discs Sander
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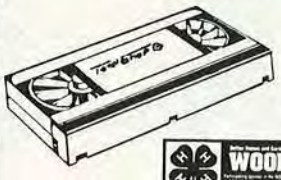

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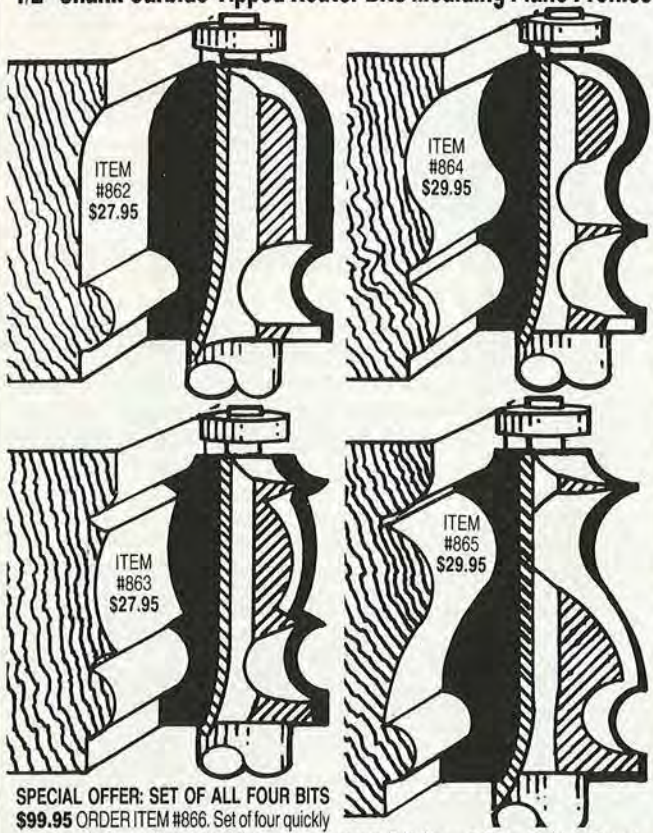

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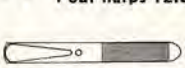

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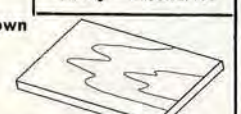

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Continued from page 28

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Although I've refinished a variety of antiques, I gained a lot of new information and confidence from the tape that I could use in my next project. I especially appreciate the handy book of "dos and don'ts" included with every tape.

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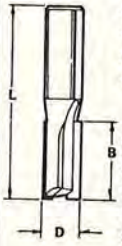

PART NO.	D	PRICE
C1001	1/4	$6
C1002	5/16	$6
C1003	3/8	$6
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C1007	1	$12
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C1009	5/16	$6
C1010	3/8	$6
C1011	1/2	$8
C1012	1/2	$15
C1013	5/8	$10
C1014	5/8	$15
C1015	3/4	$10
C1016	3/4	$15
C1017	1	$12
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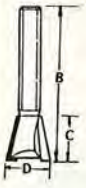

PART NO.	D	PRICE
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C1068	3/8	$7
C1069	1/2	$7
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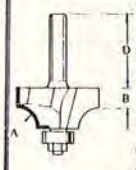
1/2" SHANK		
C1074	1/2	$7
C1076	3/4	$9
C1077	1	$12

Beading

1/4" SHANK



PART NO.	A	PRICE
C1157	1/16R	$11
C1158	1/8R	$11
C1159	3/16R	$11
C1160	1/4R	$12
C1161	5/16	$13
C1162	3/8R	$15
C1163	1/2R	$16
1/2" SHANK		
PART NO.	**D**	**PRICE**
C1171	1/2R	$16
C1172	3/4R	$20

Cove Bits

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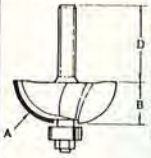
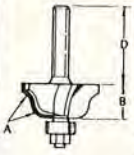


PART NO.	A	PRICE
C1138	1/16R	$12
C1139	1/8R	$12
C1140	3/16R	$12
C1141	1/4R	$13
C1142	5/16R	$14
C1143	3/8R	$15
C1144	1/2R	$16
1/2" SHANK		
C1149	1/2R	$16
C1151	3/4R	$28

Roman Ogee

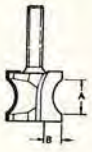
1/4" SHANK



PART NO.	A	PRICE
C1153	5/32	$16
C1154	1/4	$18
1/2" SHANK		
PART NO.	**D**	**PRICE**
C1155	5/32	$16
C1156	1/4	$18

Fingernail

1/4" SHANK



PART NO.	A	PRICE
C1214	3/8	$14
C1215	1/2	$18
C1216	3/4	$20
1/2" SHANK		
PART NO.	**A**	**PRICE**
C1217	3/8	$14
C1218	1/2	$18
C1219	3/4	$20
C1220	1	$22
C1221	1-1/2	$24

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C1267	3/8	$14
C1268	1/2	$14
C1269	3/4	$20
1/2" SHANK		
PART NO.	**A**	**PRICE**
C1270	3/8	$14
C1271	1/2	$14
C1272	3/4	$20
C1273	1	$25
C1274	1-1/2	$28

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Freud's new FT2000, 3-1/4 HP Plunge Router with 1/2 inch collet has been engineered with your needs for a versatile and safe tool in mind. The mighty **3-1/4 HP** motor is the most powerful you can buy!!

FOUR major features separate the FT2000 from other routers and make it a pleasure to use!

The **Long Collet**, 1-3/8 inch, has 6 constricting slots. This feature allows for a longer, more even grip of the bit shank.This decreases run out found on routers with shorter, single slotted collets and increases operating safety.

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With the **Sliding Shaft Lock** found on the Freud FT2000, bit changing is simple, safe and easy. Only the one wrench provided is needed. No more busted or bruised nuckles and hands!! This is best appreciated when changing a bit with your router mounted under a table.

Safety was an important factor when the on-off switch and the plunge lock were designed! They would need to be released at the same time in the case of an emergency. Both are designed with a downward stroke to disengage each feature.

The *on-off switch* is located on the side of the router. A simple flick of the left thumb while holding the handle turns the machine on-off.The *plunge lock* is located by the right handle. It can be conveniently operated by the fingers of the right hand.

A 1/4 inch collet reducer and collet wrench are standard with this powerful machine. Optional accessories include micro-adjustment parallel fence and a set of template guides.The FT2000–3-1/4 HP Plunge Router List: $299.90 Call today for the name of your local Freud distributor!

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CALIFORNIA LAUREL

Call me myrtle, if you please

Plain-sawed myrtle

Myrtle burl

Drive along southwest Oregon's coast, and you'll see signs shouting myrtle novelties. In the Coos Bay-Coquille area, a thriving cottage industry has sprung up to produce these wood items. Why tout this wood? For more than 170 years, the California laurel, commonly called myrtle, has been novel.

"The foliage, when bruised, gives out a most powerful, camphor-like scent, ...I have been obliged to remove from under its shade, the odor being so strong as to occasion violent sneezing," wrote English botanical explorer David Douglas in 1826.

With myrtle causing such a reaction, Oregon shipbuilders of the mid-1800s must have been a noisy lot. They called on the wood extensively for parts that required strength as well as smooth-wearing qualities. Today, turners and other woodworkers prize myrtle for its beauty.

Wood identification

The California laurel (*Umbellularia californica*), and its distant cousin sassafras, represent the only North American species of an entirely tropical genus.

As home range, myrtle settles between the mountains and the Pacific Ocean, from southern Oregon down through California. Myrtle, an evergreen, doesn't mind high, dry, wind-swept environs, but in them, rarely grows larger than bush-size. To attain its finest development, myrtle demands the rich, moist valley soil. There, the tree, swathed in its thick, reddish-brown bark, can attain a 90′ height and a 5′ diameter.

Marked by green, glossy leaves from 2½″ to 4½″ long, myrtle trees bear small yellow-green flowers in the spring. Inedible, round, purple berries appear later.

Myrtle has a tan sapwood and close-grained heartwood of a pleasing light-brown color. And, even the plainest boards have some favorable figure, as myrtle develops attractive mottle, bird's-eye, and swirling burls.

Working properties

In hardness, strength, and weight, myrtle compares favorably with oak. Turners favor myrtle because of its tighter grain and ease of sanding.

The same attributes woodturners praise, however, pose difficulties for craftsmen relying only on hand tools. To work myrtle, even power tools should have carbide blades. When planing or routing figured myrtle, expect some tear-out.

You can glue myrtle with all types of adhesives, and screws hold tightly in the wood. And, you won't need sanding sealers or fillers on myrtle's grain, except in figured areas where grain switches. The wood takes stain and all finishes without problems.

Uses in woodworking

Turners prefer highly figured stock, especially burls for bowls, but also make candlesticks, decanters, and other items of myrtle. Cabinetmakers seek veneers of figured myrtle for custom case goods and furniture pieces.

Cost and availability

Where it grows, myrtle will cost from $1.50 to $3.00 per board foot for plain stock. Burls and figured stock command higher prices. Along Oregon's beaches, you can pick up myrtle driftwood for free, or buy it from coastal roadside businesses.

Expect to pay about $2 per square foot for figured burl veneer. You won't find myrtle plywood available anywhere, and lumber only occasionally in other parts of the nation.

Illustration: Steve Schindler
Photographs: Hopkins Associates

TAMBOUR

First used in France during the 17th century, tambour gained acclaim in the U.S. when the rolltop desk skyrocketed in popularity during the late 1800s. Nowadays, you can add a fashionable and functional accent to your projects with this time-honored alternative to hinged doors.

Whether you're building a breadbox, video cabinet, appliance garage, or even the writing desk on page 44, a tambour curtain adds a special charm to your project. Unlike hinged doors, a tambour curtain won't swing into nearby objects.

PLAN NOW FOR SMOOTH ROLLING LATER

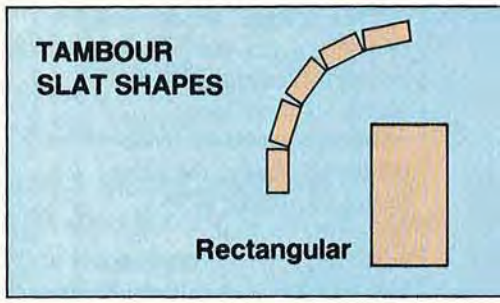
Like the section-view tambour winding around this page, all tambour curtains ride in narrow tracks and consist of slats of wood held together with a canvas backing. To help you build a similar curtain into your next project, we developed this simple planning procedure.

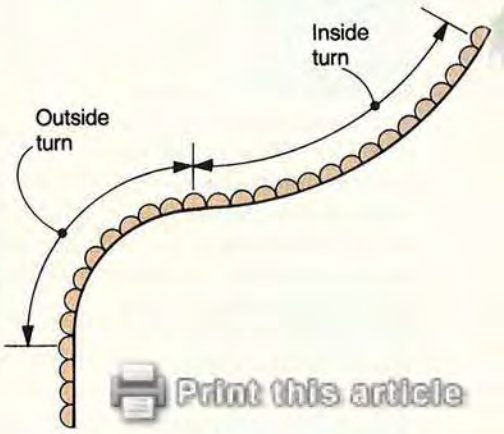
With your cabinet dimensions in hand, determine the sizes of the tambour slats and the tracks by using the chart and drawing *below*. Note that larger cabinet openings (spans) require thicker and wider tambour slats for rigidity and appearance.

Now, refer to the examples shown *above right* and select the shape of the slats. Keep these considerations in mind for tambours that will prove both attractive *and* practical:

- Rectangular slats add a contemporary touch.
- Chamfered slats fit traditional or contemporary designs.
- For a nostalgic, traditional appearance, try the rounded-over or half-round shapes.
- Projects with an inside turn such as the one shown at *right* require a half-round or beveled shape to allow the tambour to make this turn. Remember that inside turns, such as on a rolltop desk, must be gradual. Otherwise, the tambour will not negotiate the turn.

Next, cut a piece of ¾" particleboard to the inside dimensions of your project's end panels for use later as a



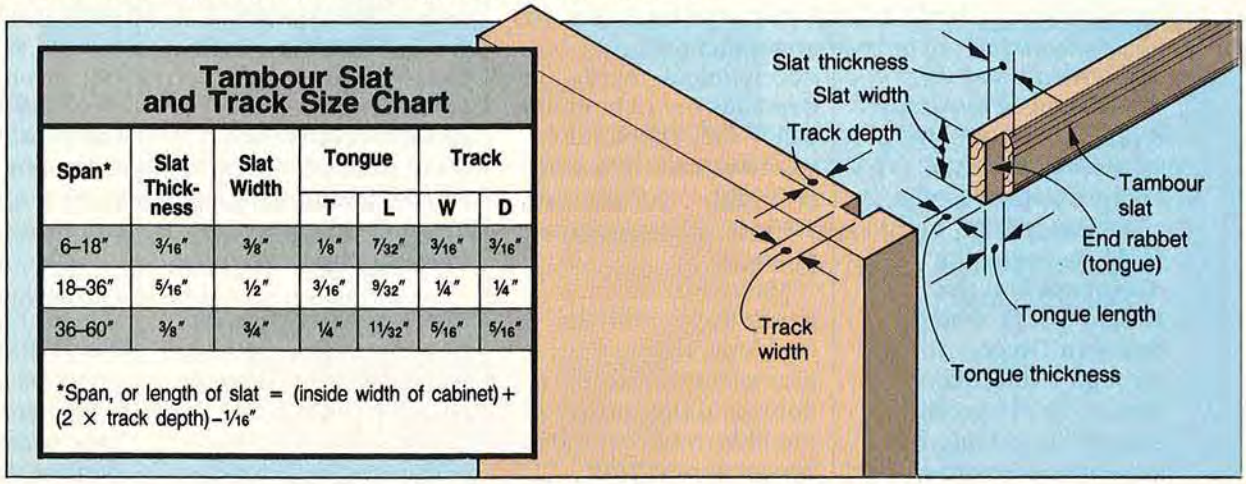


Print this article

Tambour Slat and Track Size Chart

Span*	Slat Thickness	Slat Width	Tongue		Track	
			T	L	W	D
6–18"	3/16"	3/8"	1/8"	7/32"	3/16"	3/16"
18–36"	5/16"	1/2"	3/16"	9/32"	1/4"	1/4"
36–60"	3/8"	3/4"	1/4"	11/32"	5/16"	5/16"

*Span, or length of slat = (inside width of cabinet) + (2 × track depth) − 1/16"

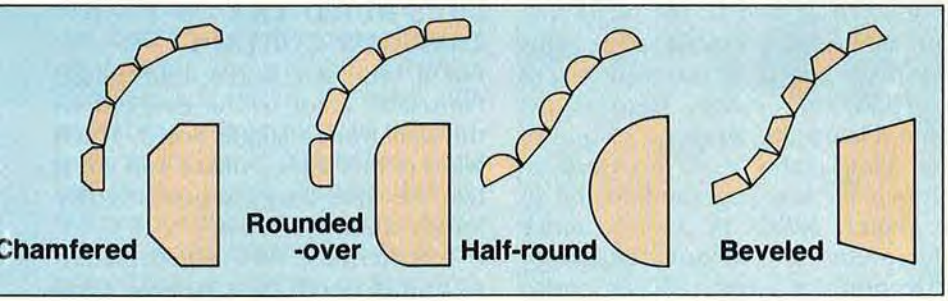


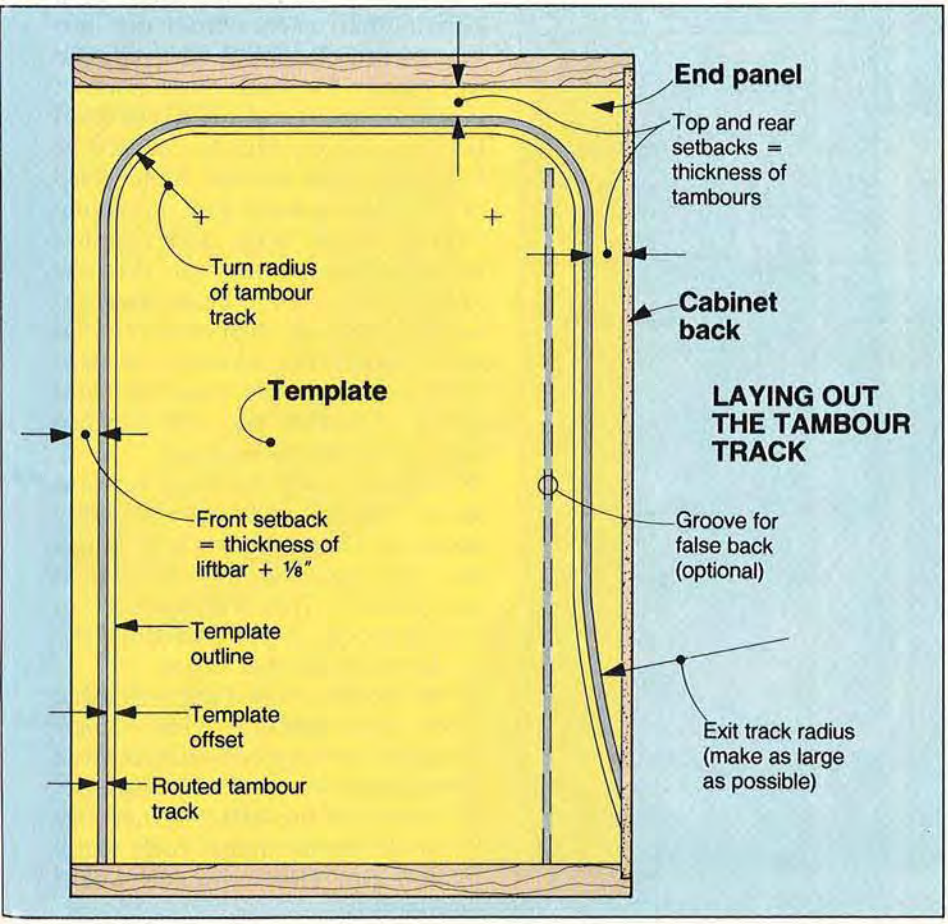
BEAUTY AND PRACTICALITY ROLLED INTO ONE

To guide you through nearly any tambour project, we'll show you how to plan, build, and install a vertical curtain such as the one in the countertop appliance garage shown at *right*. If you would like to build this project, or one like it without a bottom so appliances can slide into it, see our free-plan offer on page 43.

To build a horizontal curtain, follow the same procedures described here, but remember that the tracks for the tambour will be in the top and bottom panels of the cabinet, not the ends.

We used the appliance garage shown *above* as an example of typical tambour construction.




End panel
Top and rear setbacks = thickness of tambours
Turn radius of tambour track
Cabinet back
Template
LAYING OUT THE TAMBOUR TRACK
Front setback = thickness of liftbar + ⅛"
Groove for false back (optional)
Template outline
Template offset
Exit track radius (make as large as possible)
Routed tambour track

routing template. On one side of the particleboard, lay out the path of the tambour track by following the guidelines in the drawing *below left* and this procedure:

First, mark the track setbacks for the front, top, and rear. When determining the front setback, remember that your lift bar should be at least as thick as the slats and set at least ⅛" back from the front edge or the cabinet side. Then, draw the tambour track parallel to the front, top, and rear, and mark the exit track radius. Using the chart *below*, determine the minimum radius for the outside turns at the top of the panels and connect the corners with a compass.

Next, determine the template offset that corresponds to the guide bushing and straight bit you'll chuck into your router. For an idea of how the template offset works, see the next page. For example, a ½" guide bushing and a ¼" straight bit will result in a ⅛" template offset. Now, draw the offset just inside and parallel to the track already marked on the particleboard.

MINIMUM TRACK OUTSIDE TURN RADIUS

Tambour Width		Minimum Radius
⅜"	=	1"
½"	=	1½"
¾"	=	2"

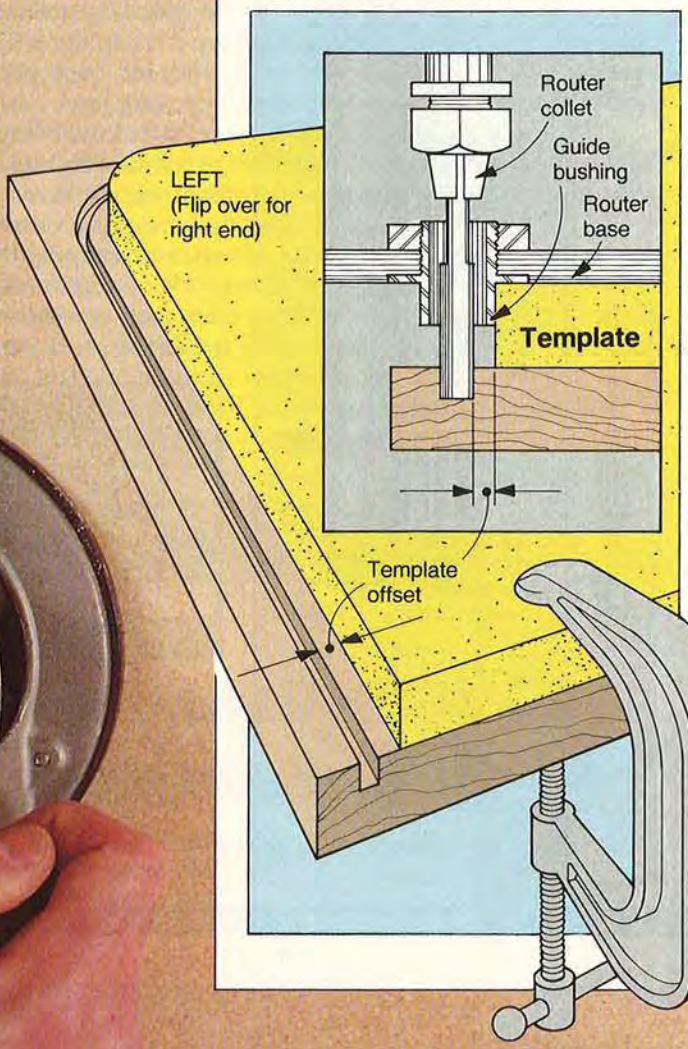
Continued

TAMBOUR

If you would like to add a ¼" plywood false back to hide the tambour, see the illustration on the previous page for the position of a holding groove. Lay out this groove directly on the end panels.

PUT THE CABINET PANELS ON TRACK

To shape the template, bandsaw along the outside of the offset line, being careful not to saw inside the mark. Then, sand to the offset line for a smooth template edge. This template will help you rout tracks on both end panels. Here's how. First, clamp the template to one of the panels and rout the track as shown on this page and in the illustration *below*. Be sure to move the router in a counter-clockwise direction for a smooth and crisp cut. Then, flip over the template and repeat this operation for the other end panel. Remove the template and use a straightedge to rout a groove for the false back if necessary. Finally, assemble the cabinet (including the false back).



***Note:** You must assemble the cabinet squarely or the tambour will not slide smoothly.*

LET'S BUILD THE TAMBOUR CURTAIN

For a tambour that's a pleasing, consistent color to the eye, cut all the slats from a single board. You'll want to buy a long board and cut it into several lengths just slightly longer than your slats.

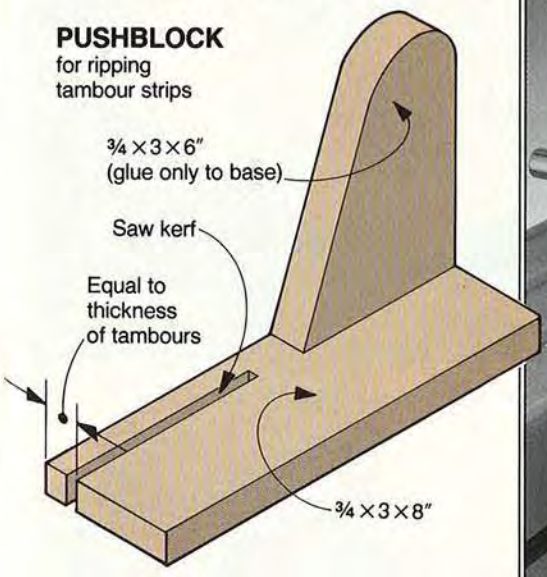
To determine how much material you'll need, first decide how many slats will be required for a curtain that reaches from the bottom of the closure to just past the first turn in the track. Since none of us are perfect (and neither is lumber), it's a good idea to cut four or five extra slats in case some warp or you make a small goof when machining them. Now, add together the thickness of one slat, the saw kerf of your ripping blade, and 1/32" for a jointer cut, then multiply that figure times the number of slats. That number tells you the total width of lumber you will cut, but keep these things in mind:

- For safety, you can't rip or joint strips from the full width of every board, so start with stock 2" wider than the amount of wood you'll saw from it. This will leave 2" of scrap stock as you machine the last slat from that board.
- Choose a board that's as thick as your slats are wide. Otherwise, be prepared to plane the board to the correct thickness.

To cut the slats, remember these words: joint, rout, sand, and rip. The sequence works like this:

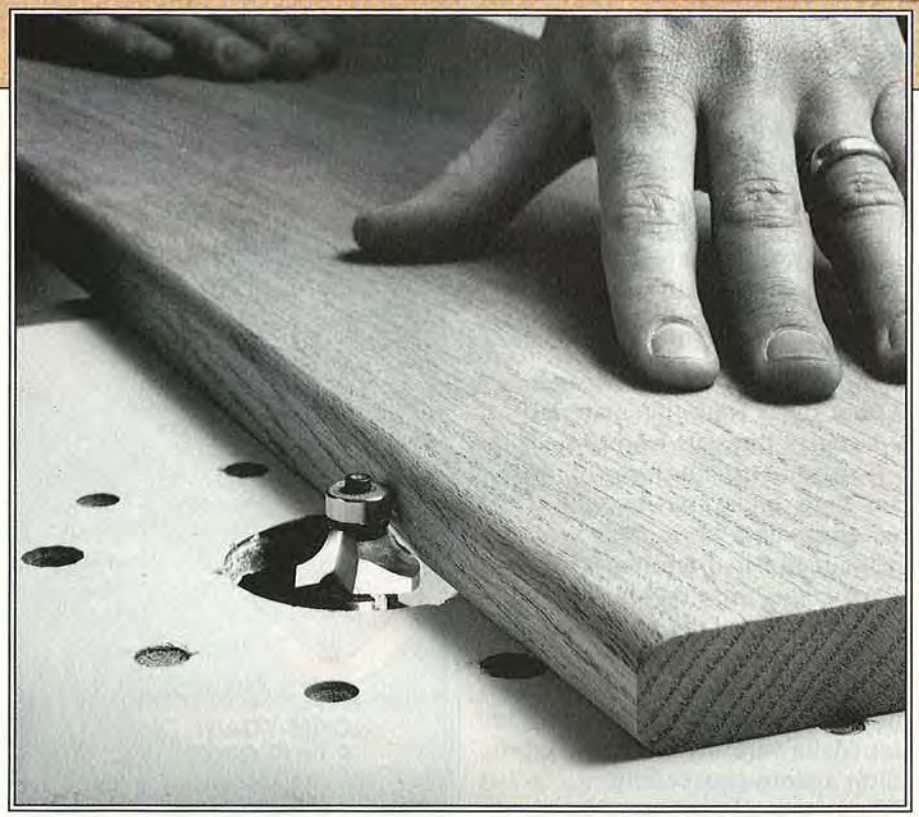
Cut the board into lengths that are 1″ or 2″ longer than the tambour (including tongues). Joint 1/32″ from one edge of the board, and rout the slat shape onto that edge as shown at *right*. (See the desk project on page 50 for a technique for making beveled strips). Now, sand the shaped surface with 150-grit paper.

Set your tablesaw fence for the thickness of the slats, and with the shaped edge against the fence, rip the board as we're doing *below right,* using the pushblock *below.* Number each slat on the sawn side so you can situate them in the tambour in the same order they came out of the board. Repeat this sequence for each slat, always jointing the sawn edge of the board to re-establish a straight and smooth edge for the next slat. To help you attach a lift bar later, rip two more slats with no routed shape.

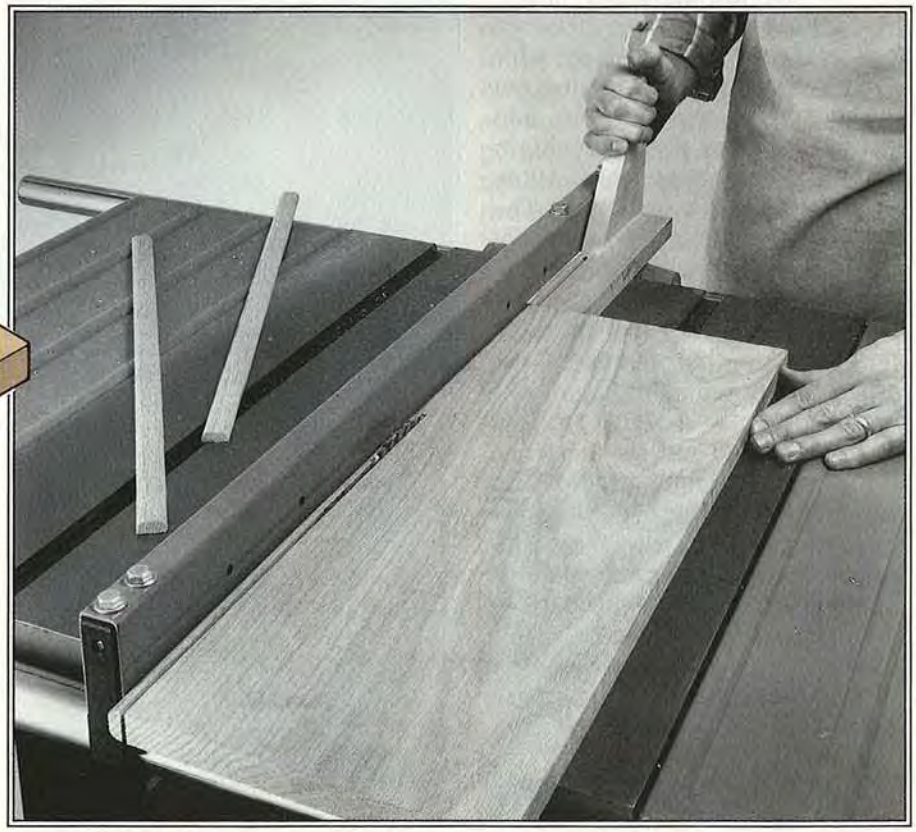


To turn that loose pile of sticks into an orderly tambour, first use a framing square to set two cleats at a 90° angle for the gluing jig shown on the next page. After screwing down the cleats, place all the tambour slats (in numbered order),

Continued



Rout slowly to avoid splintering as you shape the tambour slat.



For safety's sake, use a pushblock to rip the tambour slats.

TAMBOUR

shaped side down onto the jig, and place the two unshaped slats at the bottom. With the slats pressed firmly together, screw the other two cleats in place.

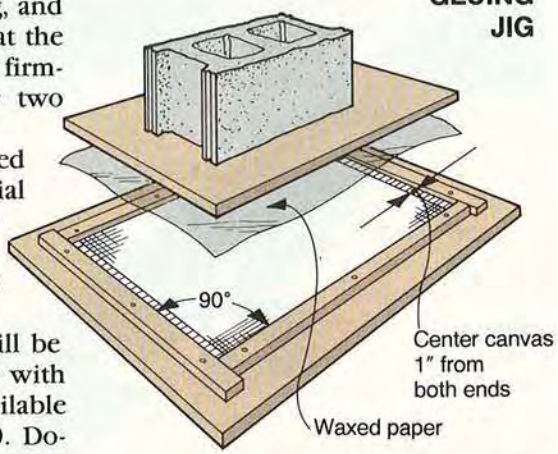
With a piece of pre-washed 10-oz. canvas, cut the material so it covers the slats from top to bottom and centers 1" from both ends (we bought our canvas at a fabric store).

If your finished tambour will be a dark color, treat the canvas with dark brown dye (the type available at grocery and variety stores). Doing so will help prevent the canvas backing from showing between the slats. Make sure the dye dries completely before proceeding.

Then, spread an even layer of white woodworker's glue over the slats and lay the canvas in place. Glue should not squeeze between the slats if you have no large gaps between them. After smoothing out the canvas with a rolling pin, add the waxed paper, particleboard or plywood panel, and weight. Allow the glue to dry for one hour. The tambour will have a slight case of rigor mortis, so break the glue between the slats by running the tambour over a tabletop as we're doing *top right*. Trim both ends of the tambour as shown at *right*.

Now, chuck a straight bit into your router table and set the fence for the tongue length of the tambour. Elevate the bit just 1/32" above the router table and run the cloth-side of the tongue over the bit. This helps even out any irregularities in the thickness of the slats. For this operation, use the pushstick at *right* to hold down the tambour. Next, flip over the curtain, raise the router bit to cut the tongue to the correct thickness, and use the same pushstick to rout the rabbet (see photo at *top left* of next page).

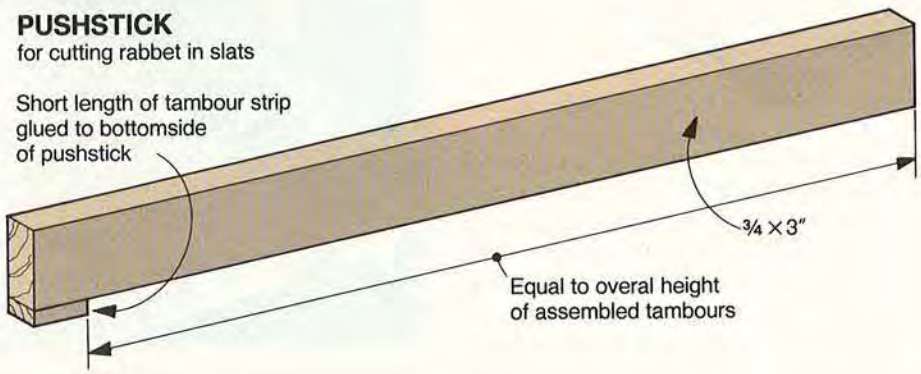
GLUING JIG



Use the corner of a tabletop to break the glue between the slats.

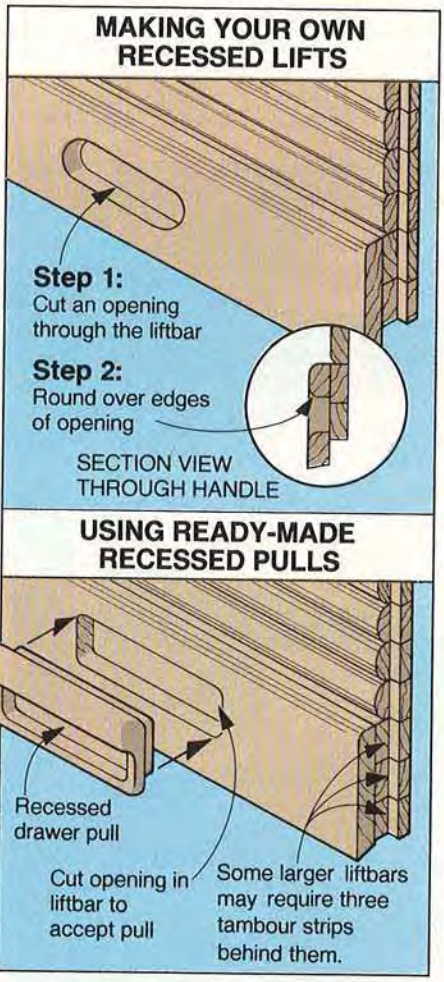
Trim the curtain with your tablesaw and stand to the side of the blade in case it ejects small slat pieces.

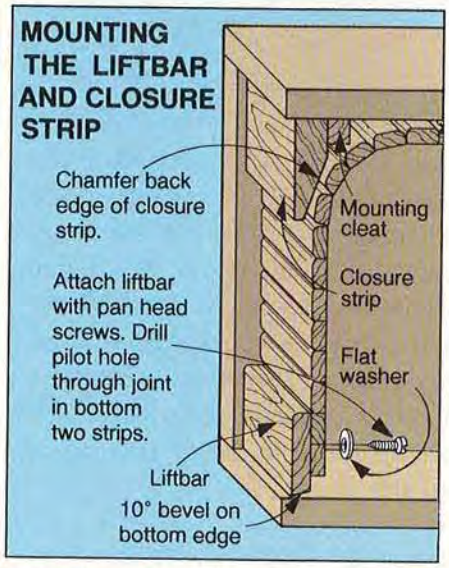
PUSHSTICK
for cutting rabbet in slats



Hold down the tambour firmly when routing the rabbet.

Attach the curtain to a disc with double-faced tape. This helps you apply stain and other finishes between the slats.


MAKING YOUR OWN RECESSED LIFTS
Step 1:
Cut an opening through the liftbar
Step 2:
Round over edges of opening
SECTION VIEW THROUGH HANDLE
USING READY-MADE RECESSED PULLS
Recessed drawer pull
Cut opening in liftbar to accept pull
Some larger liftbars may require three tambour strips behind them.


MOUNTING THE LIFTBAR AND CLOSURE STRIP
Chamfer back edge of closure strip.
Attach liftbar with pan head screws. Drill pilot hole through joint in bottom two strips.
Liftbar
10° bevel on bottom edge
Mounting cleat
Closure strip
Flat washer

FINAL CURTAIN CALL: INSTALL THE TAMBOUR

It's the moment of truth—time to test the tambour for fit. The curtain should slide with just a slight amount of side-to-side play. Ours initially felt tight and jerky, so we lubricated the tongues with some paraffin—beeswax also works. Presto! A smooth-rolling tambour.

When you're satisfied with the fit, add a lift bar by using one of the two methods shown at *left*. Or, mount the lift bar to the tambour with two knob-type pulls like those shown in the project on page 44. To attach the lift bar and an optional closure strip, see the illustration *below left*. The closure strip hides the turn in the tambour.

Finally, you have several means to stop the tambour from sliding too far back into the cabinet. A solid lift bar coming in contact with a closure strip will do the trick. Or, set one screw into each track at a point where the back end of the tambour will contact the exposed heads of the screws when the lift bar reaches the top of the closure.

To finish the curtain, remove it from the cabinet and attach it with double-faced tape to a scrapwood disc as shown at *far left*. This arrangement allows the stain and finish to reach between the slats.

Free PLAN OFFER

For a free plan of the appliance garage on page 39 (and one just like it without a bottom), send a self-addressed, stamped, No. 10 business envelope to:

Terrific Tambour
WOOD® Magazine
PO Box 11454
Des Moines, IA 50336–1454

Foreign readers, please include an international reply coupon.
Offer expires April 15, 1990.

Written by Bill Krier with James R. Downing Photographs: Hopkins Associates Illustrations: James R. Downing

TAMBOUR-TOPPED WRITING DESK

OUR REFINED RENDITION OF A FURNITURE CLASSIC

I answer dozens of letters a month from readers requesting plans for a rolltop desk. Unfortunately, most plans call for desks too massive for most homes and too complex for most busy woodworkers. With that in mind, Jim Downing, our design editor, headed toward the drafting table. Jim's version, with its handsome tapered legs, box-jointed drawers, and smooth-sliding tambour curtain, won't overpower a room, yet still has a comfortable 24½×44" writing surface. If you need a writing desk without the fancy top, just build the base unit shown on page 47.

Marlen Kemmet *How-to Editor*

Print this article

Note: Unless you've had previous experience making tambour, we recommend that you read the shop-tested tambour-techniques article starting on page 38 for in-depth information on cutting pieces and forming the tambour curtain.

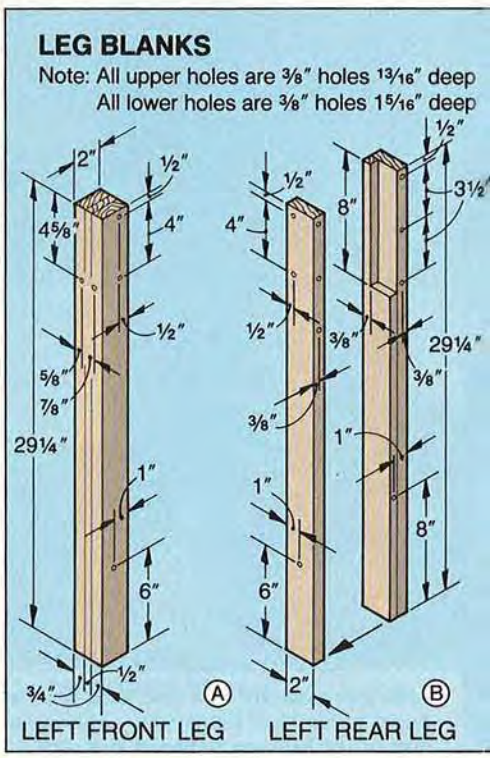
START FAST BY MAKING THE LEGS

1 For the front legs (A) and rear legs (B), cut four pieces of ½"-thick stock and eight pieces of ¾"-thick material to 2⅛×29¼". (We used ash; you might also consider oak, walnut, or cherry.)

2 With the edges and ends flush, glue and clamp a piece of the ½" stock between two pieces of ¾" stock for each front leg (A) where shown on the drawing *below.*

3 For the rear legs (B), cut the tambour-curtain notch in each of the two remaining ½"-thick pieces—see the drawing *below* for dimensions. Glue and clamp the pieces to form a pair of rear legs. Remove glue from each notch.

4 Scrape the excess glue from *one edge* of each leg, and joint the scraped edge. Using your tablesaw,

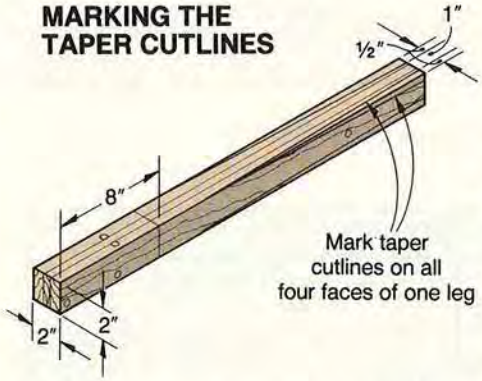


rip the opposite edge of each leg for a 2" finished width.

5 Mark the centerpoints and drill ⅜" holes to the depths listed on the drawing at the bottom of the page. (With the leg ends flush, we used a square to ensure the centerpoints aligned from leg to leg.)

6 Using the drawing *below* for reference, mark the cutlines on all four surfaces of one leg.

MARKING THE TAPER CUTLINES



7 Following the drawing *below right*, taper-cut each leg. See the Buying Guide at the end of the article for a taper-jig source. Or, see our taper-jig plans in the August 1987 issue of WOOD® magazine.

NOW, CUT THE APRONS, RAILS, AND STRETCHERS

1 Cut the side aprons (C) to size. Using dowel centers, transfer the dowel-hole centerpoints from the legs to both aprons; the aprons sit back ⅛" from the face of the legs where shown on the Corner Detail on page 47.

2 Drill ⅜" holes 13⁄16" deep for the dowel pins where marked.

3 Rip and crosscut the rear aprons (D) to size (we edge-joined two 4"-wide pieces to form each 8"-wide apron). Transfer the locations and drill three dowel holes in each end of each apron.

4 Cut the two lower side rails (E) and single stretcher (F) to size plus 1" in length.

5 Dry-clamp a side apron (C) between a front and rear leg. Lay the assembly on a flat surface. Hold the lower side rail (E) under the assembly, centered under the dowel holes. Mark the cutlines, and miter-cut the rail to length (the angled cut measures 1½°). Repeat for the other side rail. Then, repeat with the rear legs and apron to mark and cut the stretcher (F) to length. Find center, and drill a ⅜" dowel hole 13⁄16" deep into the ends of each rail and the stretcher.

NEXT, MOVE ON TO THE DRAWER SUPPORT PARTS

1 Cut the front panel rail (G) to size. Cut the side panel rails (H) and rear panel rail (I) to size plus 2" in length; you'll miter-cut these to exact length later.

2 Cut a ½" rabbet ¼" deep along one edge the length of each piece.

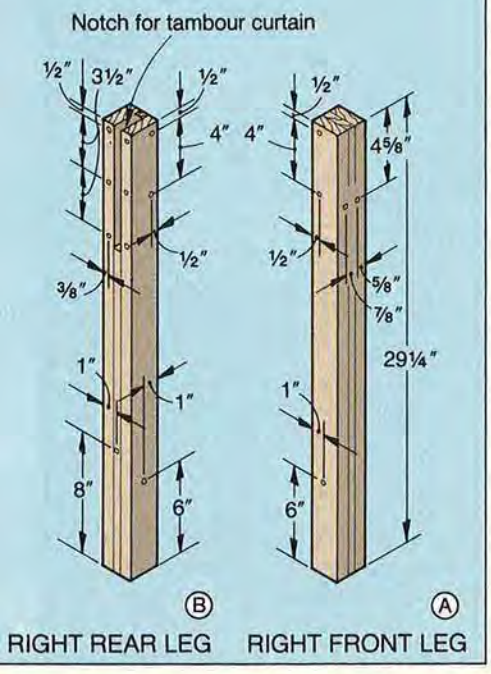
ASSEMBLY BEGINS WITH THE BASE FRAMEWORK

1 Glue and clamp a side apron (C) and rail (E) between a front and rear leg. Using the remaining legs, apron, and rail, repeat the process.

2 Glue and clamp the front rail (G), rear aprons (D), and stretcher (F) between the leg assemblies (A, B, C, E). Check for square.

3 Measure the distance, and cut both side panel rails (H) to length, miter-cutting the back end of each and notching the front end of each H (see the Corner Detail accompanying the Basic Desk Assembly

Continued



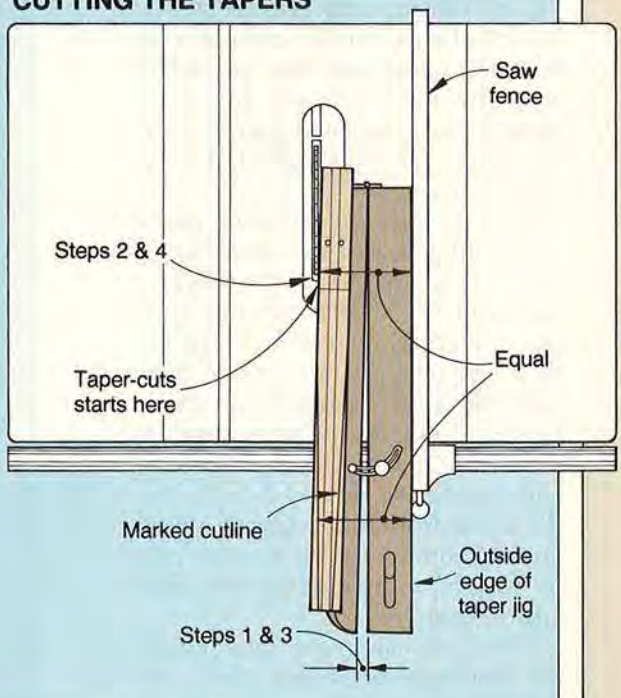
CUTTING THE TAPERS

STEP 1. Adjust angle of taper jig so marked cutline is parallel to outside edge of taper jig.

STEP 2. Position fence so the blade lines up with marked cutline. Cut two adjacent sides of all four legs.

STEP 3. Adjust the angle of the taper jig so the remaining cutline on the leg runs parallel to the outside edge of the taper jig.

STEP 4. Position the fence so the blade lines up with the remaining cutline. Cut the other two adjacent sides on each leg.



WRITING DESK

Drawing for reference). Measure and cut the rear-panel rail (I) to length, miter-cutting both ends.

4 Keeping the top surfaces of the rabbets flush and the pieces level, glue and clamp the side panel rails (H) against the side aprons (C) and rear panel rail (I) against the inner rear apron (D).

5 Measure the rabbeted opening, and cut the panel insert (J) to size from ¼" plywood. Glue and clamp the insert in place.

6 From the edge of ¾" stock, rip the four drawer guides (K) to size. Set them aside for now; you'll add them later.

MOVE RIGHT ON TO THE WRITING SURFACE

***Note:** If you prefer a solid-wood desk top, edge-join ¾" stock to form a panel measuring 26×45". Trim it to 24½×44" after removing the clamps.*

1 Cut the side rails (L) and front rail (M) to length plus 1". Cut the rear rail (N) to size.

2 Cut two pieces of ¼" plywood to the size listed in the Bill of Materials *plus* 1" in length and width for the insert (O). (If you can find it, ½" plywood will save you the trouble of laminating two ¼"-thick pieces.) Using contact cement, glue the pieces together with the edges and ends flush. Measure the thickness of the laminated panels; ours measured 7/16" instead of the ½" we expected.

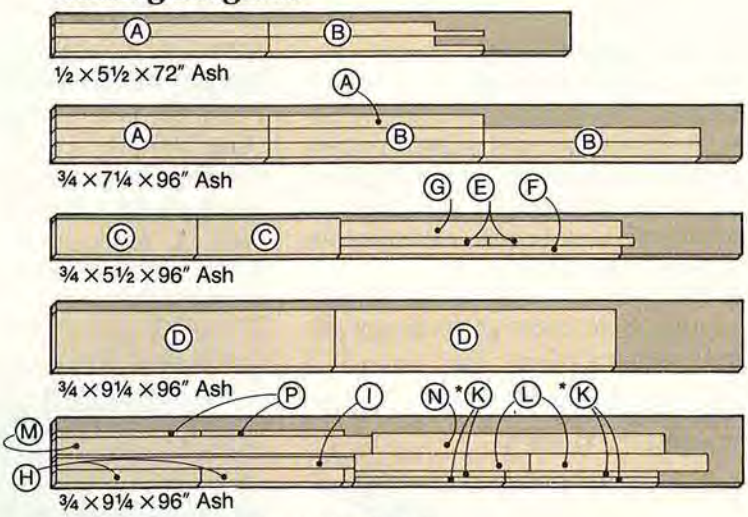
3 Rout a rabbet to the same depth as the thickness of the plywood insert (O) along the inside edge of each rail (L, M, N). (In our case, the rabbet depth was 7/16".) To ensure that the rear rail will be flush with the other three frame members, rout rabbets the same depth as you just cut across the two bottom ends of the rear rail.

4 Cut the front rail to length, miter-cutting both ends. Cut the side rails to length, miter-cutting the front end of each.

5 Glue and clamp the rails together, checking for square. The back edge of N should be flush with the

Continued

Cutting Diagram



*Rip ¼"-wide guides from edge of stock.

Bill of Materials

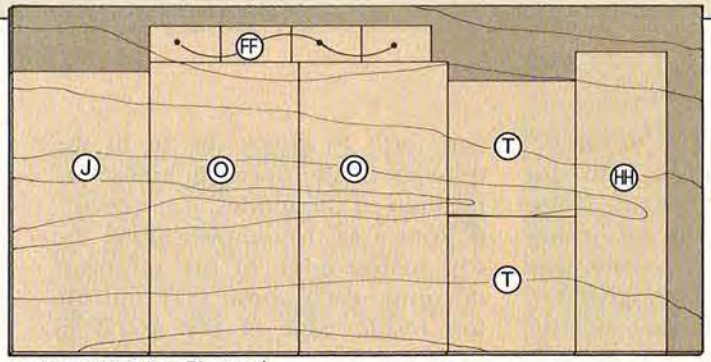
Parts	Finished Size* T	W	L	Matl.	Qty.
DESK BASE					
A* front legs	2"	2"	29¼"	LA	2
B* rear legs	2"	2"	29¼"	LA	2
C side aprons	¾"	5"	20"	A	2
D rear aprons	¾"	8"	39"	A	2
E* lower rails	¾"	1"	20¾"	A	2
F* stretcher	¾"	1"	39⅝"	A	1
G front panel rail	¾"	2⅜"	39"	A	1
H* side panel rail	¾"	1⅝"	20"	A	2
I* rear panel rail	¾"	1⅝"	41¼"	A	1
J insert	¼"	39"	18⅞"	AP	1
K drawer guides	¼"	¾"	21⅛"	A	4
WRITING SURFACE					
L* side rails	¾"	2¼"	24½"	A	2
M* front rail	¾"	2¼"	44"	A	1
N rear rail	¾"	2½"	40½"	A	1
O* insert	¼"	40½"	20¾"	AP	2
P cleats	¾"	¾"	20"	A	2
LOWER DRAWERS					
Q fronts	¾"	4 3/16"	19⅜"	A	2
R sides	½"	4 3/16"	21¾"	A	4
S backs	½"	3⅝"	18⅞"	A	2
T bottoms	¼"	18⅞"	17¼"	AP	2
U slides	¼"	¾"	21"	A	2

Parts	Finished Size* T	W	L	Matl.	Qty.
UPPER UNIT					
V* end panels	¾"	11¼"	24"	A	2
W false back	¾"	6¼"	41½"	A	1
Y guides	¼"	¾"	5"	A	8
Z top	¾"	6½"	44"	A	1
TAMBOUR					
AA lift bar	½"	2"	42"	A	1
BB slats	⅜"	¾"	42"	A	26
CC retainer	¼"	¾"	41½"	A	1
TOP DRAWERS					
DD fronts/backs	½"	3 1/16"	10 5/16"	A	8
EE sides	½"	3 1/16"	5½"	A	8
FF bottoms	¼"	5"	9 13/16"	AP	4
GG slides	¼"	¾"	5"	A	4
HH back panel	¼"	42¼"	12¾"	AP	1

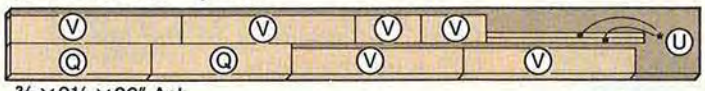
*Initially cut parts marked with an * oversized. Trim them to finished size according to the how-to instructions.

Material Key: LA-laminated ash, A-ash, AP- ash plywood

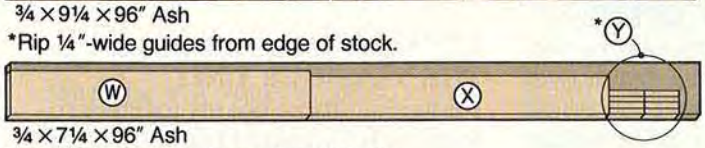
Supplies: ⅜" dowel pins 1½" long, ¾"×17 brads, #6×½" flathead wood screws, #6×¾" flathead wood screws, #8×1¼" flathead wood screws, contact cement, 20¼×40" 10 oz. canvas, stain, finish.



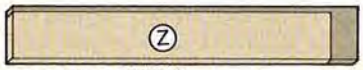
¼ × 48 × 96″ Ash Plywood



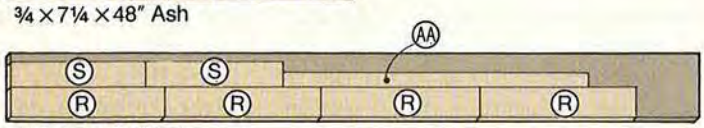
¾ × 9¼ × 96″ Ash
*Rip ¼″-wide guides from edge of stock.



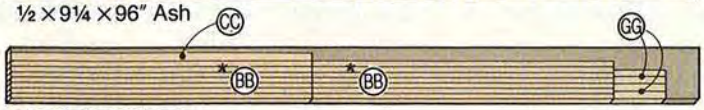
¾ × 7¼ × 96″ Ash
*Rip ¼″-wide pieces from edge of stock.



¾ × 7¼ × 48″ Ash

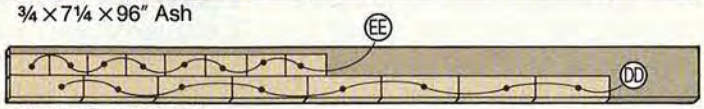


½ × 9¼ × 96″ Ash

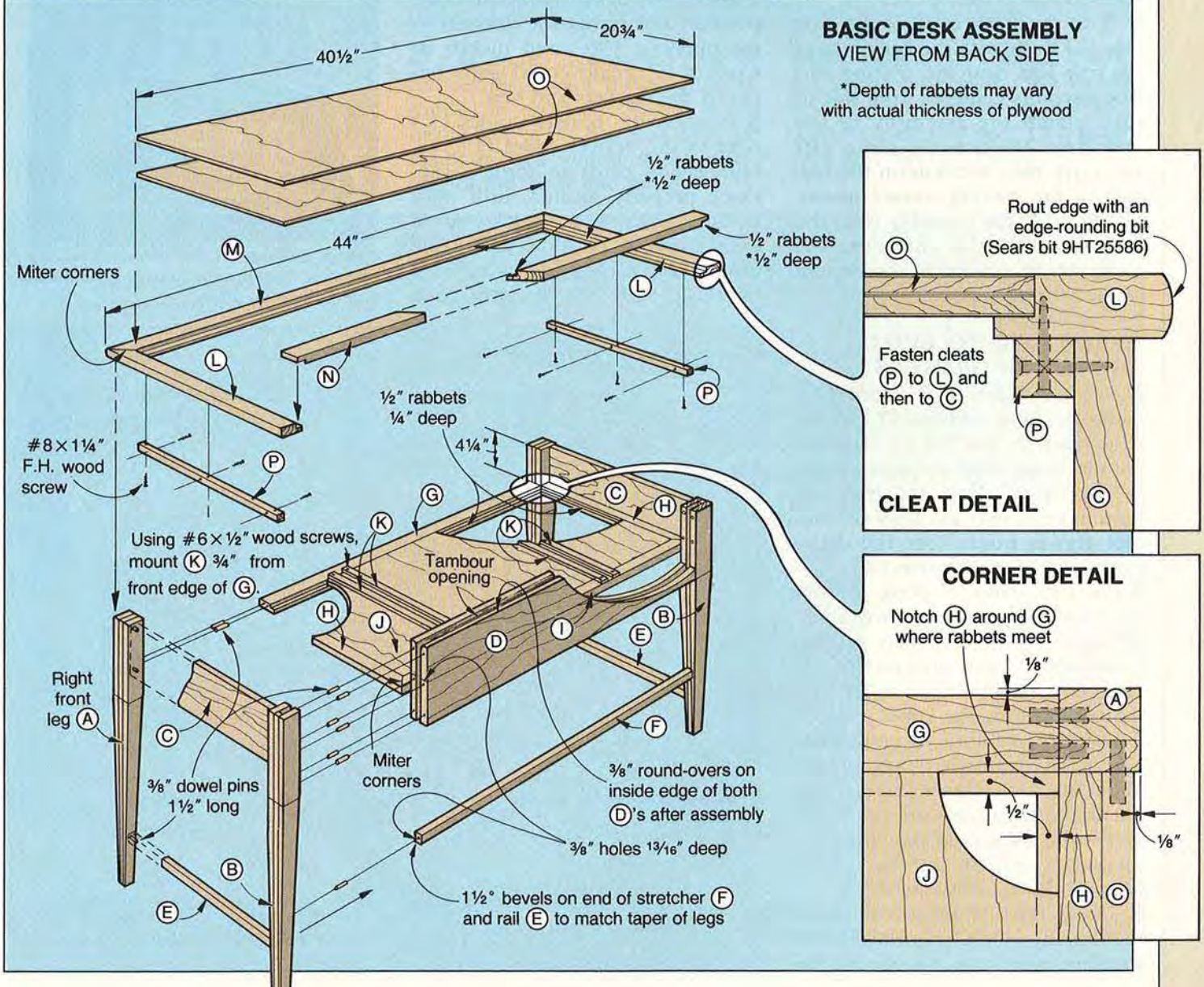


¾ × 7¼ × 96″ Ash
*Rip ¼″-wide slats, retainers, and slides from edges of stock.

¾ × 7¼ × 96″ Ash



½″ × 7¼ × 96″ Ash



back end of each rail (L). Measure the rabbeted opening, and cut the oversized insert (O) to fit the opening. Glue and clamp the insert in place. If you plan to add the tambour unit, cut a 1¼" notch 42¼" long in the back of the writing surface where shown on the Upper Unit Assembly Drawing.

6 With an edge-rounding bit (we used a Sears no. 9HT25586), rout along the outside edge of front and side rails (see the Cleat Detail accompanying the Basic Desk Assembly Drawing for reference).

7 Cut the cleats (P) to size. Drill and countersink the mounting holes in each cleat.

8 With the back ends of the side rails (L) flush with the back face of the rear legs, and the writing surface assembly centered from side to side, clamp the assembly to the desk base. Position the cleats (P) and mark their location on the *bottom* of the writing surface assembly. Remove the assembly from the desk base, and glue and screw the cleats where marked to the bottom of the writing surface.

HERE'S HOW TO BUILD THE LOWER DRAWERS

1 Cut the fronts (Q), sides (R), backs (S), and bottoms (T) to the sizes listed in the Bill of Materials for the lower drawers. Next, cut a ¼" groove ¼" deep, 5/16" from the bottom edge into the drawer sides and drawer fronts. (See the drawing at *right* for reference.)

2 Cut a ½" dado ¼" deep, 4" from the back end of each drawer side.

3 Lightly mark diagonals on the front face of each drawer front to find center. Drill a 3/16" hole in each drawer front for the knob.

4 For extra stability, fit your miter gauge with an auxiliary fence. Mark the box-joint locations and cut the joints in the drawer fronts and sides. (We used the box-joint jig featured in the February 1989 issue of *WOOD* magazine.)

5 Dry-clamp the pieces to check the fit. Glue and clamp the drawer together, checking for square. Do *not* glue the bottom (T) in the ¼" groove; instead, secure it to the back (S) with ¾" brads. (We placed masking tape on the inside of each drawer, next to the box joints to catch the excess glue.)

6 Cut ¼" filler blocks (see the drawing *below*), and fill the exposed grooves in each drawer end.

NOW, FIT THE LOWER DRAWERS IN THE OPENING

1 Cut the drawer slides (U) to size. Center, glue, and clamp the drawer slides to the bottom of each drawer. Check that the slides are square with the drawer fronts (Q).

2 As shown in the photo *at right,* position and center the drawers in the opening. (We used nickels as spacers to create equal gaps between the drawers and legs.)

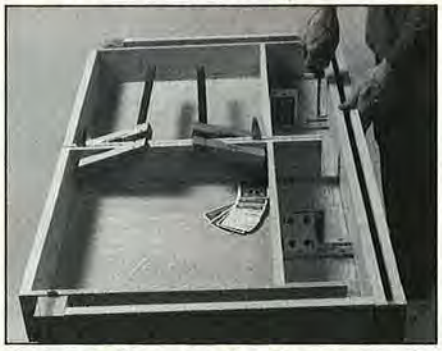
3 Position the drawer guides (K) next to the drawer slides (U), using playing cards to form a gap. Once properly located, drill pilot holes and screw the back end of each guide in position. Screw the front end of each guide to the front rail (G). Slide the drawers back and forth to check the fit of the drawers in the opening; adjust the position of the guides, if necessary.

4 Rout a 3/8" round-over along the top inside edge of the tambour opening—each apron (D) and the top inside edge of the notch in each rear leg.

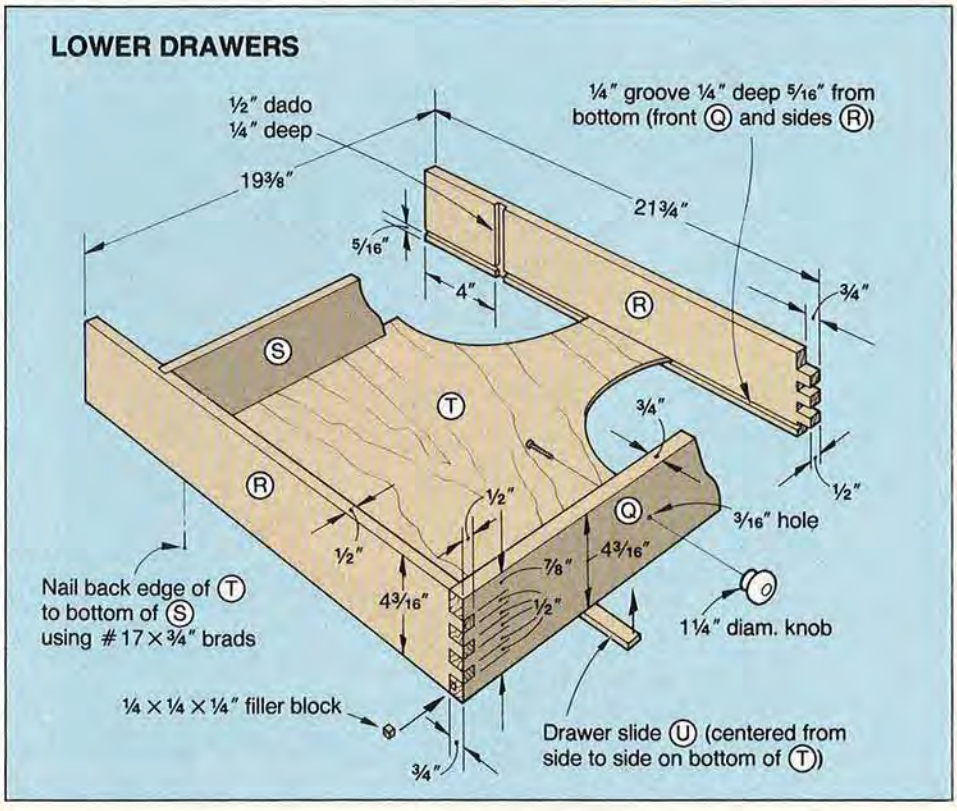
5 Position the writing surface, and fasten the assembly to the aprons (C) with the cleats.

LET'S BEGIN BUILDING THE TAMBOUR UNIT

1 Edge-join three boards together to form each end panel blank (V). See



Center and secure the drawers in the opening. Position the drawer guides and screw them in place.



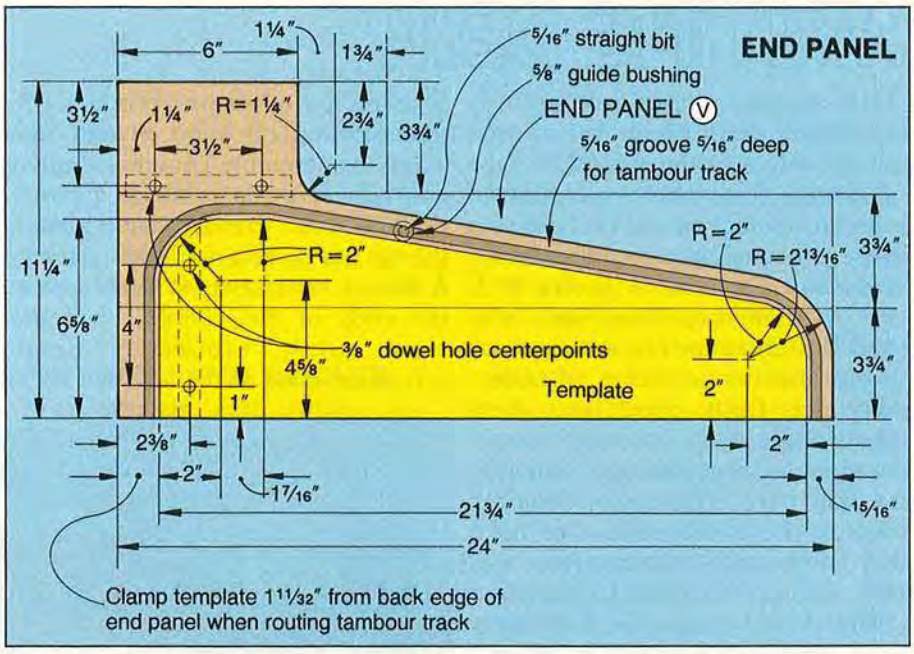
the End Panel Drawing for finished size. (For each end panel, we cut two pieces 3¾" wide by 25" long, and one 3¾" wide by 9" long. After edge-joining the boards, we cross-cut both ends of each panel for a 24" finished length.)

2 Cut or rout a ⅜" rabbet ¼" deep along the back *inside* edge of each end panel.

3 Using the End Panel Drawing for reference, mark the outline, and cut one of the end panels to shape. Sand the cut edges smooth. Using this panel as a template, mark the outline onto the second end-panel blank, and cut and sand it to shape.

4 Viewing the same drawing for reference, mark the layout, and cut the routing template to shape from ¾" particleboard.

5 Clamp the template to the *inside face* of one end panel where shown on the End Panel Drawing. Secure a 5⁄16" straight bit and a ⅝" bushing to your router. Follow the edge of the template with the bushing to rout a 5⁄16" groove 5⁄16" deep in the inside face of the panel to form the tambour track. Repeat on the inside face of the other end panel.

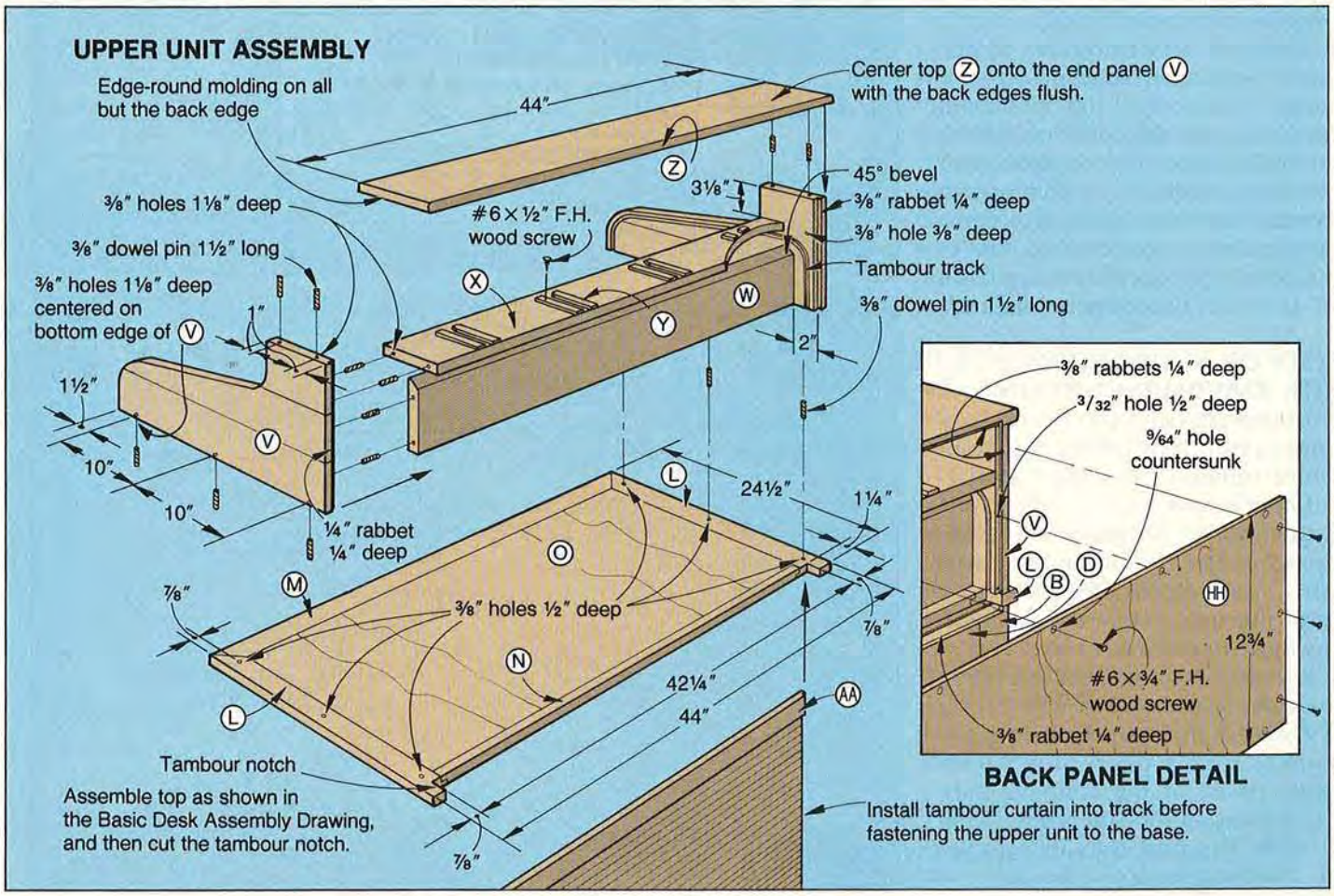


NOW FOR THE UPPER UNIT

1 Cut the false back (W) to size, bevel-ripping the top edge at 45°.

2 Cut the drawer shelf (X), guides (Y), and top (Z) to size.

Continued



WRITING DESK

3 With the same edge-rounding bit used earlier, rout along the front and side edges of the top (Z).

4 Mark the four hole centerpoints on the inside face of one end panel, where dimensioned on the End Panel Drawing. Drill ⅜" holes ⅜" deep where marked. Then, stick ⅜" dowel centers in the holes. Position the top and bottom edges of both end panels flush, check that the rabbets align along the back edge, and squeeze together the panels. This will transfer the hole centerpoints to the inside surface of the other end panel. Drill the holes in the second panel where indented.

5 Using dowel centers, mark the location, and drill a pair of holes in each end of the drawer shelf (X) and false back (W).

6 Drill ⅜" holes 1⅛" deep in the bottom and top edges of each end panel where located on the Upper Unit Assembly Drawing. Glue and clamp the back and drawer shelf between the end panels.

7 Insert ⅜" dowel centers in the holes in the top edge of the end panels. Center the top (Z) from side to side on the upper unit. With the back edge of the top flush with the back edges of the end panels, squeeze the parts together to transfer the dowel hole centerpoints to the bottom surface of the top. Drill ⅜" holes ⅜" deep where marked.

LOTS OF STRIPS FORM THE TAMBOUR CURTAIN

1 Cut the lift bar (AA) to size, cutting a 15° bevel along the front where shown in the Side View Detail *above right.*

2 Cut two ¾" boards to 7¼" wide by 42" long. Rip 26 tambour slats (BB), each ⅜" thick from the edge of the boards. (You have enough stock to cut several extras.)

3 Form the routing jig as shown in the three-step drawing at *right.*

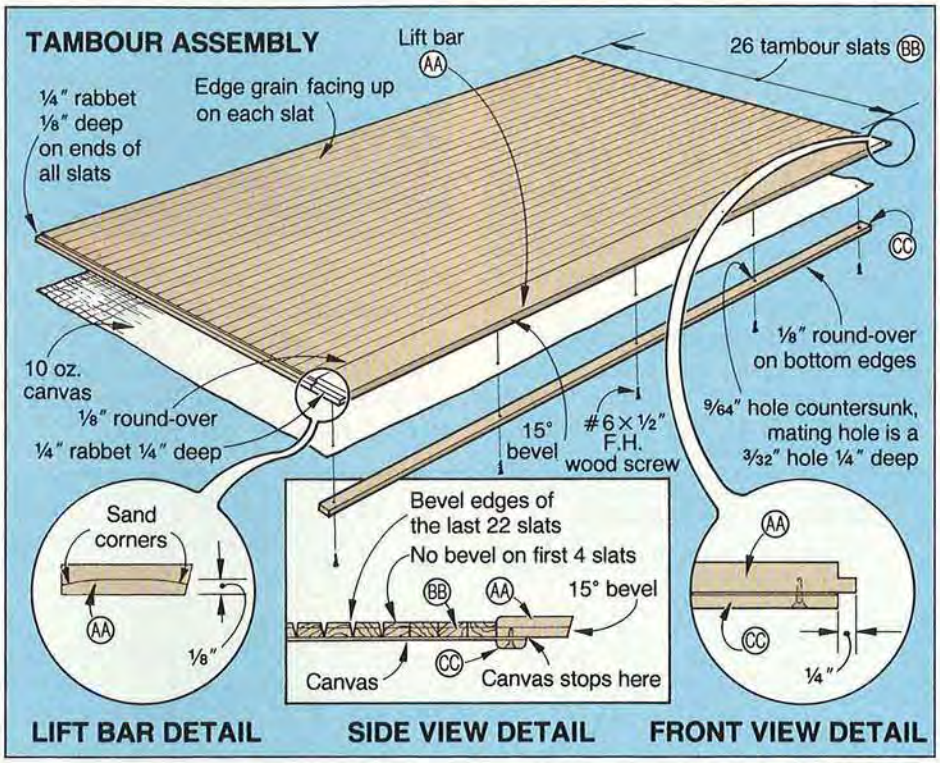
4 Using the routing and jig setup shown, rout a bevel along both edges of 22 of the tambour slats. (As shown on the Side View Detail at *right,* the four slats nearest the lift bar don't require a bevel.)

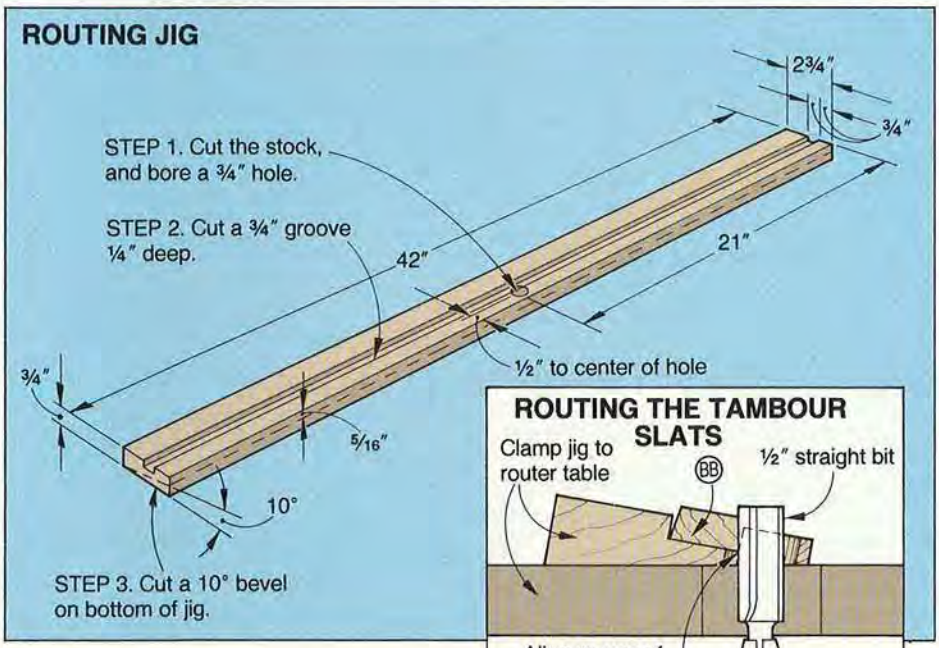
5 Using the tambour technique article starting on page 38 and the Tambour Assembly Drawing, center and adhere the 26 slats to a piece of 20¼ × 40" canvas; don't attach the lift bar or retainer strip just yet.

6 Rout a ¼" rabbet ⅛" deep across the ends of the tambour curtain. Now, cut ¼" rabbets ¼" deep across the ends of the lift bar (AA). For a smooth-sliding lift bar, sand the ends where shown on the Lift Bar Detail accompanying the Tambour Assembly Drawing *below.*

7 Align the lift-bar rabbets with the rest of the rabbets in the tambour curtain, and adhere the lift bar to the canvas.

8 To hold the canvas firmly to the lift bar, cut the retainer strip (CC)





to size. Sand ⅛" round-overs along the bottom edges of the strip. Drill the holes and fasten the strip to the bottom face of the lift bar.

ADD THE FOUR UPPER DRAWERS

1 Cut the drawer fronts and backs (DD), sides (EE), bottoms (FF), and slides (GG) to the sizes listed in the Bill of Materials.

2 Cut a ¼" groove ¼" deep, 5/16" from the bottom edge into the drawer front, back, and sides where shown on the drawing *below.* (We cut ours using a dado blade.) Mark the location, and cut a 5/16" notch 2½" wide, centered along the bottom side of each drawer back where shown in the drawing.

3 Mark diagonals on the front face of each drawer front to find center. Drill a 3/16" hole in each drawer front for the knobs.

4 Mark the box-joint locations, and cut the joints in the drawer parts.

5 Dry-clamp the pieces to check the fit. Glue and clamp each drawer; check for square. Glue and clamp a slide (GG), centered on the bottom of each drawer.

6 Cut filler blocks and plug the exposed groove holes in the ends of each drawer.

7 Center the four drawers in the opening on the drawer shelf. Working from the back side, locate and fasten the drawer guides to the drawer shelf.

SAND, SEAL, AND DELIVER

1 Insert the tambour curtain into the tambour track in the upper unit. Put dowel centers in the holes in the bottom edge of the end panels (V). With the back edges of the end panels flush with the back edge of the side rails (L), clamp the upper unit to the writing surface to transfer the dowel hole centerpoints to the side rails.

Clamp the upper unit in position on the desk base, and rout a rabbet to house the plywood back.

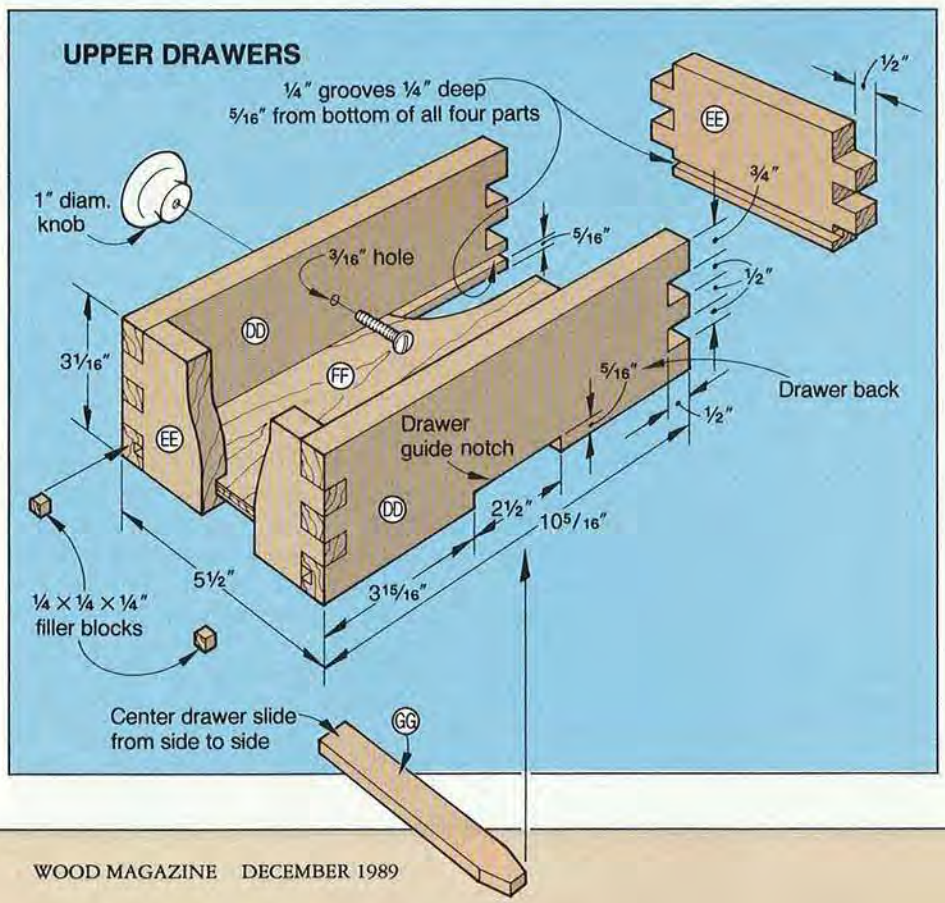
2 Working from the back side, slide the tambour curtain in the tambour slot in the upper unit, and check the operation of the curtain in the tambour notch in the rear legs. Adjust the location of the upper unit if necessary, and remove the tambour curtain.

3 As shown in the photo at *left,* rout a ⅜" rabbet ¼" deep along the inside edge of the top (Z) and rear apron (D) to house the back (HH). Square the rounded corners with a chisel. Measure the rabbeted opening, and cut the back (HH) to size.

4 Remove the upper unit from the base, and drill the dowel holes in each side rail (L) where indented.

5 Finish-sand all the parts. Glue and dowel the upper unit to the writing surface. Stain and finish as desired. Working from the back side, slide the tambour curtain into the tambour slot in the upper unit.

6 Using the the Back-Panel Detail accompanying the Upper-Unit Assembly Drawing on page 49 for reference, drill the holes, and screw the back (HH) into the rabbet. Attach the knobs (see the Buying Guide for our source).



BUYING GUIDE

- **Knobs.** Porcelain knobs with accented brass center and pedestal. Six, 1"-diam. knobs, catalog no. 175PK1, $1.80 each. Two, 1¼"-diam. knobs, catalog no. 175PK2, $1.95 each. Add $3.30 for shipping. Constantine's, 2050 Eastchester Road, Bronx, NY 10461.
- **Taper jig.** Reverses for right- or left-hand use. Heavy-duty, professional-quality jig, catalog no. VA377, $17.45. Constantine's, address and shipping charge above.

Produced by Marlen Kemmet
Project Design: James R. Downing
Photographs: Hopkins Associates
Illustrations: Kim Downing; Mike Henry

IMAGES IN TIME

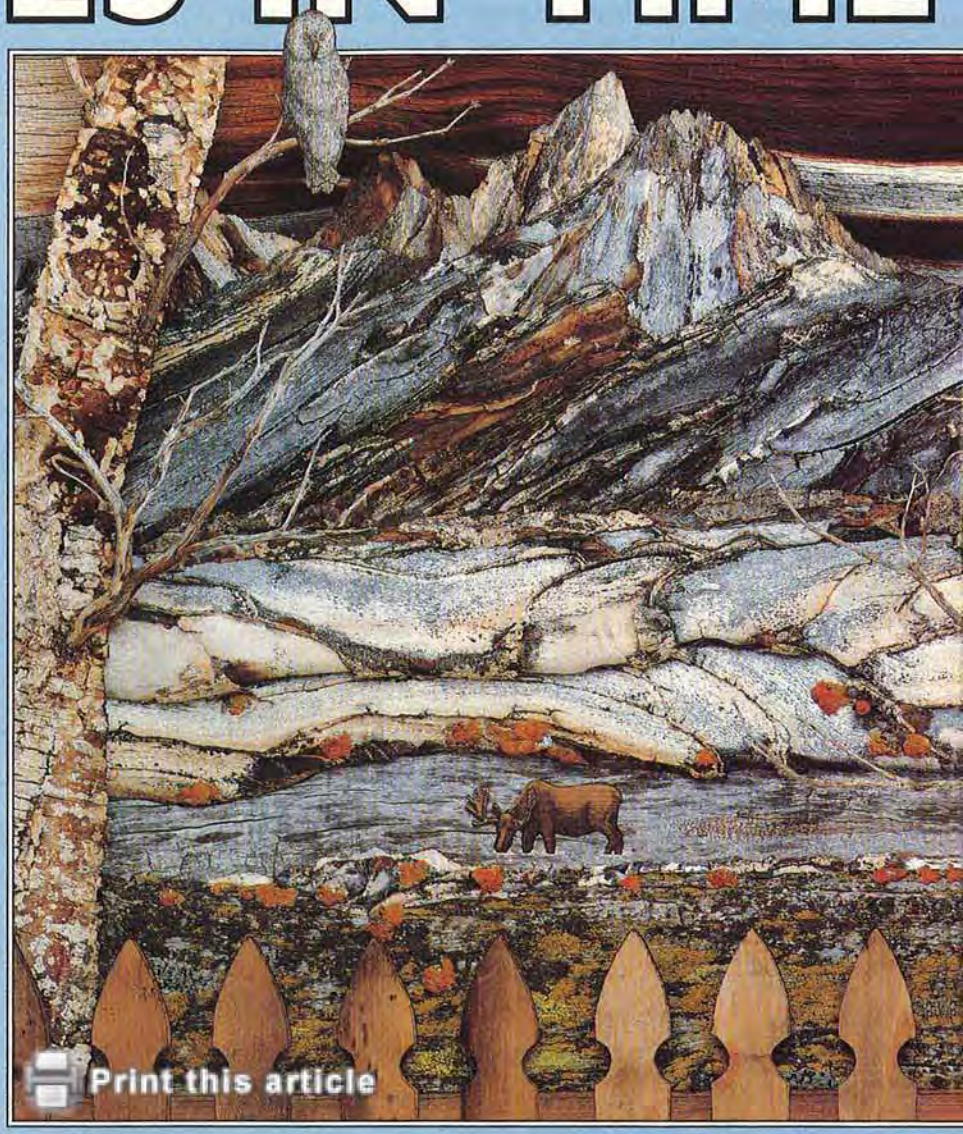
Jim Shirley knows wood. As a youngster on his parents' farm, he worked it as a hobby. Later, he became a building contractor. But, Jim, now 64 and retired from the building trade, was always more interested in old wood than new. "Seeing old architecture destroyed just made me heartsick," Jim recalls, "and I wanted, somehow, to find a way to preserve the old scenes and the grand old buildings."

Todd, Lex, Gil, and Jim Shirley display one of their wooden masterworks, created with wood etched and colored by Mother Nature.

He began his preservation efforts by salvaging the past. Jim rescued interesting pieces of wood and hung them on the walls of his home. Although his collection grew steadily, he knew that his wood display should be made meaningful.

Then, inspiration hit. Jim created a rustic landscape—the first of many scenics—to come from some of his favorite pieces of old, salvaged wood.

From that first creation 20 years ago sprang hundreds of compositions. And, interest in his work has grown to the point where his three sons—Lex, 33, Gil, 31, and Todd, 26, shown *above* with Jim—work full-time to keep up with demand. In his Rexburg, Idaho, shop, we listened to Jim unfold the story behind his wooden masterworks.



You might cross paths with Jim Shirley if you happen to vacation in Wyoming's Grand Teton National Park and the neighboring national forests in southern Idaho. He wanders there, guiding his pickup slowly along the snaking roads, his eyes scanning the glens and gullies for appealing pieces of wood. There's also the chance you could catch him prying an old weathered board from a teetering outbuilding on a friend's ranch closer to Rexburg. Stick around—he'll be happy to tell you the wood's destiny as he nails a new board in its place.

Give Jim some encouragement. Let him tell you in his softspoken way how he creates spectacularly detailed scenes in unfinished wood—the older the better. Follow him home. See for yourself how his work—part onlay and part low-relief—vividly portrays the depth and shadowed contrast of rugged western mountains, cattlemen's landscape, timeworn ranch barns, and elegant Victorian homes.

Bits and pieces of wood—all selected for color and texture—join one another as the landscapes and buildings. From tiny, toothpick-sized fragments, he produces ac-

WITH MOTHER NATURE AS THEIR PARTNER, JIM SHIRLEY AND HIS SONS CREATE MASTERWORKS THAT WHISPER 'REMEMBER WHEN'

cents—wagon wheels, pumps, telegraph poles, windmills, mailboxes, and lampposts.

Jim smiles when he's asked how long it takes to complete one of his compositions that command anywhere from $5,000 to $15,000. Noting that he considers Mother Nature, who creates his raw material, an artistic partner, he says, "Many years, because she is so slow. She takes her own sweet time, but, in the end, anywhere you look, you'll see no hues like hers." He'll add though, that actual construction takes from two to four solid months.

Jim's sure hands double-check the fit of a tiny piece in the master plan drawn on the backing board.

NEW LIFE FOR WOOD FROM THE PAST

When Jim talks about wood, he lowers his voice, seemingly out of reverence and respect. "Wood is such a fascinating, expressive, and adaptable material. Its grain and fiber tell about its struggle to grow and survive." Shifting to a more comfortable stance, he comments, "Wood is a history book—laid open—in use all around us."

Jim can speak of history because, in his woodworking, he touches it. Each shade of color, each texture in every one of the Shirleys' pieces came from carefully selected wood.

Continued

IMAGES IN TIME

Maybe it once belonged to an aging fence. Or, it was a clapboard on a sagging shack. Perhaps a machinery building yielded a hand-hewn plank. A barn roof shed a shingle. The wood portrays the past because it belongs to the past.

In place, the chosen pieces of wood glow with almost iridescent colors. Tones of rust, cinnamon, umber, gray-blue, mahogany, rich yellow, and olive green reflect light in an uncanny way. And, the Shirleys do nothing to enhance them. They refuse artificial, manipulated colors and finishes—no paints, stains, oils or varnishes.

Many of their pictures represent several hundred years of natural processing, the colors created as the seasons came and went. "They're the resulting mix of sunshine and moonlight, wind and rain, sand and snow," Jim explains.

SELECTING FROM A NATURAL PALETTE

With the familiarity that comes from years of association, Jim and his sons know which wood works for what. They value bleached Douglas fir, for instance, for the straight, smooth look it lends to some backgrounds. Ponderosa pine takes detail, so it may end up as gingerbread on a turn-of-the-century porch. Hard-to-find planking from cottonwood or quaking aspen gives them the delicate silver-gray of a moon-glow sky. Vivid colors usually come from wood that contained a large amount of sap, such as a tree's root ball or a knot.

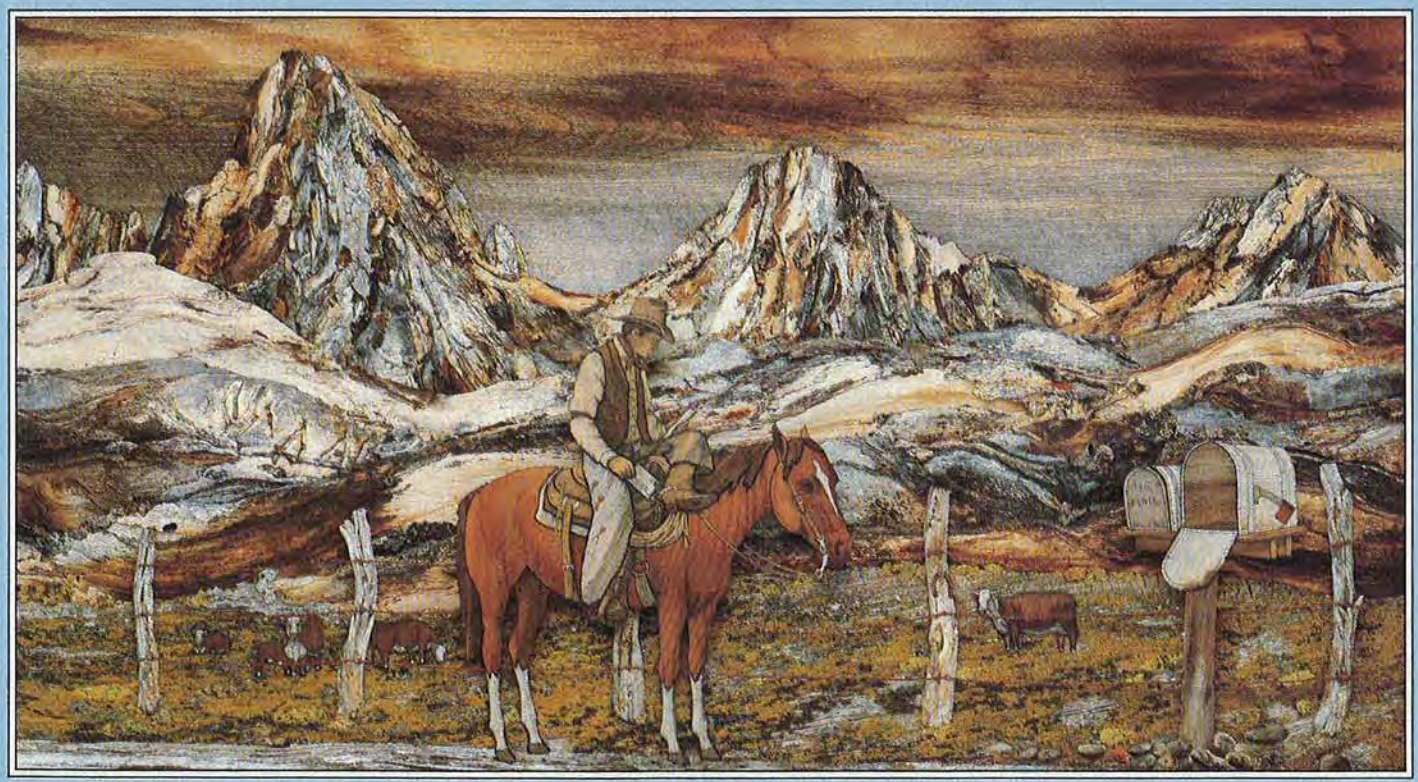
Gnarled burls from any tree give the Shirleys the graceful, convoluted texture of distant hills or ocean waves. Wood damaged while growing sometimes develops an unusual profile as nature heals the defect, and it fits in perfectly as a fence post or craggy peak.

To suggest sagebrush, tumbleweed, or a rocky outcropping, they leave in place the still-living lichens found clumped together on decrepit roof shingles. Sometimes, they plug in small branches for trees and shrubs. Even weather-beaten pieces of stunted sagebrush from the Idaho high country find their way into the western scenes.

Searching for such a palette of color often parallels the proverbial needle-in-a-haystack. On a wood-gathering trip to Arizona, for example, Jim sought out a particular sawmill that specialized in ponderosa pine. He knew that the wood, after years of exposure, produced knots in the yellow shades he needs to make a natural-looking sun in his wooden skies. Jim watched the sawyers for 16 hours while more than 15,000 boards slipped past his eyes. "I ended up selecting only 89 of the boards to haul home," he recalls. "Then, the rains of fall do the staining, and the freezing nights of a high altitude winter do the mellowing."

NEW JERSEY VICTORIANS COME HOME TO IDAHO

Over the last few years, Jim's fascination with Victorian architecture has led him down a research path thousands of miles long. His travels



Featuring a seldom-seen view of the Teton Mountains from the west, "Dear John" depicts in wood the loneliness of a cowboy.

Lichen that suggests groundcover still clings to the wood Jim chose for part of the western landscape.

have taken him to cities, villages, and ranches around the nation. In Cape May, New Jersey, Jim found 600 Victorian homes. "The whole town is a historic district," he exclaims in his quiet way.

Jim pays accurate attention to historic architectural detail. Yet, he exercises artistic license, too, moving buildings from their original location into scenes he assembles in his mind. In time, though, these mental pictures must be put to paper. Then, he selects from trays of 35mm slides taken of buildings that have caught his attention. The slides help maintain authenticity and proportion as he designs and details the composition.

With this technique, the craftsmen often end up with quite a cosmopolitan setting. A church may have originated in Oregon, a home in San Francisco, an elaborate Victorian porch in faraway New Jersey. The background might include the peaks of the nearby Tetons. But, the Shirleys homogenize them in their wooden creation.

The straight grain of weathered pine makes a perfect pair of working chaps on the cowboy. The Shirleys added black india ink for the envelope address.

THREE-DIMENSIONAL HOUSE CONSTRUCTION

Jim and his sons' years of working together as building contractors come into play in the start-up of a scene. Working under the doctrine, "You can't change the wood or you ruin it," they study the design of each building to be included in the new masterwork.

Every building constructed requires a backing board of ¼" plywood, cut slightly smaller than the completed structure will appear. This ensures that no "new" wood will show on the edges of the final assembly.

For the wood required in a building, the Shirleys search the stockpile, selecting suitably colored and grained boards and scrap pieces for every detail. Then, they rip the old ¾" and 1" stock to the needed widths. Resawing reduces the boards to thicknesses from ⅛" to 1/16".

With a scrollsaw, Jim or one of his sons cuts the larger of the tiny boards to shape. Often, smaller details and pieces demand additional carving or dimensioning with an X-acto knife. Some final sanding on the back side reduces thickness of a piece or controls the edges for a precise fit.

During the construction, the workers handle most pieces—some no wider than a pencil lead—12 to 24 times before placement. In one picture, a 6"-tall lamppost took 20 pieces of wood chosen from seven colors on the original weathered plank. The Shirleys refuse to imitate or enhance natural surface colors with paint. Instead, they use black india ink, not considered a color, without altering the wood's hue or obstructing grain.

Finally, the components for each building come together, glued in place with contact cement layer upon layer (usually starting with the roof area as the initial layer) on the plywood template. Jim stresses that, "This is not inlay work. It's a built-up process I call 'relief overlay.' "

With a belt sander, Todd takes a little bit more wood off the edge of a nearly completed barn so that it fits.

The completed buildings or major elements fit into notches cut into the foreground of the land in the final composition. Glue holds them in place. All of these tiny layers of wood and the plywood backings add up—a 44×32" picture can weigh as much as 50 pounds!

Jim and his sons refuse to spray the completed work with protective coating, partly because of their respect for the wood's natural qualities that require no enhancing, and partly for a very practical reason. "A finish only makes the dust collect," Jim notes. "We leave the wood natural so that you can can occasionally—and easily—blow away the dust to once again expose the details we wanted and put there."

For information on the Shirleys' wooden masterpieces, and a descriptive list of limited lithographs of their best work (small and large sizes, from $200 to $400), write: *Paintings In Wood, 325 Harvard, Rexburg, Idaho 83440.*

Written by Layne Dearden. Photographs: Borg Anderson, Gil Shirley, DiAnn Wright

TABLESAWS

HOW TO BUY THE MOST IMPORTANT WOODWORKING MACHINE IN YOUR SHOP

THREE ESSENTIALS FOR ANY TABLESAW

Before you can set a tablesaw to the task of helping you accurately machine project pieces, its three basic parts—table, blade, and inner mechanisms (undercarriage)—must each do the following:

The **table** must form a perfectly flat plane—something you can check with a straightedge. Although we didn't find this problem with any of the models we tested, we've talked with plenty of readers who have come across warped tables. Our advice: ask for a new table if this happens to you. If you prefer to buy your tools through the mail, check the table before accepting shipment.

Likewise, the table extensions (wings) should bolt to the table so they continue the flat plane.

The **blade** must spin in a perfect circle without wobble. Sloppiness here can lead to inaccurate cuts, excessive saw marks, and even pose safety problems such as kickback, binding, and the like.

Inner mechanisms, including the tilt and elevation controls shown in the three anatomy illustrations at *right,* should be machined to exacting tolerances so the blade doesn't shake either side to side or up and down.

THREE TYPES OF SAWS: WHICH ONE'S FOR YOU?

Of the saws we tested, only two—the Swiss-made Inca 250 (see box page 71) and the French-made Kity 100618—didn't fit into one of the following three categories. The Inca has a tilting table, whereas all North American- and Taiwanese-made saws have mechanisms for tilting the blade arbor. The Kity, although similar to the cabinetmaker's style saws because of its removable table, has lighter components in the undercarriage. Both saws produce accurate cuts.

Kity's sliding cutoff table fits many saws, including the Delta Unisaw shown here.

Direct-drive ($280–$500)

As shown in the illustration at *right* of the Sears model 29805 direct-drive tablesaw, the blade arbor and motor arbor are one, meaning that any motor vibration transmits directly to the blade. Lightweight elevation and tilt mechanisms, along with the two small brackets that hold the entire mechanism to the tabletop, further contribute to blade movement.

The Delta model 34-740 and Makita model 2711 direct-drive saws have slightly beefier mechanisms, but cost $150–$200 more than the Sears machines. The Sears and Delta tablesaws have open drip-proof motors, while Makita includes a universal motor with speed-reduction gearing.

Because of their light weight and potential for blade movement, we believe these saws are better suited to construction carpentry than precision woodworking.

Print this article

MEISEL HARDWARE SPECIALTIES

Hi, my name is Paul Meisel. I'm a plan designer. My goal is to create the best possible project plans and make them available to you. This 8-page sampler shows just a few of the many plans we have available.

You'll find all of these projects very "do-able". I personally built every one of the projects shown using only a small table saw, a band saw (a scroll saw would work just as well), and a drill press. For the yard ornaments I used only a sabre saw.

Except for the birdhouses, each project shown will take just a couple of hours to complete; and notice how easy these projects are to paint! I invite you to order some of these plans—I'm sure you'll love them! I'll be watching for your order.

Paul Meisel

Paul Meisel, President
Meisel Hardware Specialties

P.S. Check out my free plan offer on the attached order blank.

World Famous MHS Meisel Hardware Specialties

Insert Sampler for WOOD Magazine

#W328

#W327

#W287

#W330

#W320

WOODWORKERS ENJOY THE ELECTRONIC AGE

Everyone loves projects which can be made in under two hours using just a scrap of 3/4" pine. And these projects are especially alluring because they're so cute! Push the nose and you hear a musical tune!

The secret lies in a fairly recent breakthrough in technology. A miniature electronic music box is used as the source of sound. With a simple push of the finger, this music box plays a tune. The teddy bear plays "Teddy Bear Picnic", the dinosaur plays, of course, "Let Me Call You Sweetheart", the reindeer plays "Rudolph the Red Nosed Reindeer", the clown plays "Send in the Clowns", and the rabbit plays "Here Comes Peter Cottontail".

You will find these projects quite easy to make. All patterns are drawn FULL SIZE and you don't have to be an artist to paint them. Plastic eyes which are included in the hardware kit make the face detail very easy. And don't worry about where to get the paint. The paint colors I used are listed underneath the plan. Order a two oz. bottle of each color for only **$1.99** per bottle.

You will also want to pick up a Hardware Parts Kit for each project you make. These kits have the music box (battery included), eyes, nose, or ribbon bows where required, as well as the fasteners, a push peg, and a sawtooth hanger. Projects require some 3/4" pine which is not included in the hardware kit. Order the plan, hardware kit, and paint today.

MUSICAL ANIMALS PLANS

Suggested paints available in 2 oz. bottles @ $1.99/EA

#W328 Musical Teddy Plan **$2.75**/EA
#72435 Burnt Sienna, #72453 Wicker, #72300 Painted Desert, and #72470 Pure Red

#W327 Musical Dinosaur Plan **$2.75**/EA
#72474 True Green

#W287 Musical Rudolph Plan **$2.75**/EA
#72434 Mustard Seed, #72429 Antique White, or dark stain as shown

#W330 Musical Clown Plan **$2.75**/EA
#72477 Real Black, #72476 Real White, #72471 Pure Yellow, #72470 Pure Red, #72408 Sweet Chocolate, and #72474 True Green

#W320 Musical Rabbit Plan **$2.75**/EA
#72476 Real White and #72300 Painted Desert

Musical Animal Hardware Parts Kits

#8495 Musical Teddy Hdw. Kit **$4.19**/EA
#8494 Musical Dinosaur Hdw. Kit **$3.19**/EA
#7906 Musical Rudolph Hdw. Kit **$4.79**/EA
#8525 Musical Clown Hdw. Kit **$3.19**/EA
#8390 Musical Rabbit Hdw. Kit **$3.79**/EA

ORDER TOLL FREE **1-800-441-9870** Ext. W12

CREDIT CARDS WELCOME

MasterCard VISA

WHAT'S A DOOR HARP?

Mounted on the inside of your door, a door harp welcomes your guests with a beautiful random musical tune each time the door is opened.

DOOR HARPS----MUSIC TO YOUR EARS

Door Harps have a sound chamber much like a guitar only much more simplified. Music wire is stretched between tuning pins and wood balls are suspended on strings. Any movement causes the wood balls to dance on the music wire resulting in a very pleasant sound.

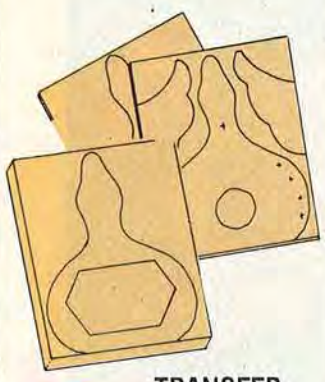
Check out the photo of our cute animal door harps on the opposite page. All the animal shapes have been extremely popular with both kids and adults. I built a raccoon for my aunt's lake cabin and suddenly all her neighbors wanted one too!

Even if you've never built a "string instrument" before, you should be pleasantly surprised at how easy door harps are to build. Follow the 8 steps illustrated below:

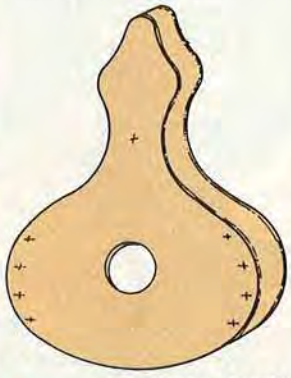
1. The sound chamber is simply a piece of 3/4″ pine sandwiched between 2 pieces of 1/8″ plywood. Our kits include the necessary plywood because not all lumber yards carry it. You will, of course, find 3/4″ stock readily available so it is **not** included in the kit. (This helps keep the cost down.)
2. After cutting the sound chamber in the 3/4″ stock, glue on the two pieces of thin plywood, and after the glue dries cut the body to the final shape.
3. Edges can be sanded by hand or you can use a drill press with a sanding drum attachment.
4. Holes for the tuning pins are drilled with a 3/16″ bit.
5. Paint the parts. Door harps are not difficult to paint—we even suggest which paint colors to get (order from opposite page).
6. Screw tuning pins into the holes, thread music wire through pin and tighten.
7. To attach clapper balls, drill a 1/16″ hole in the ball, place end of string in hole and secure with a toothpick dipped in glue. Break off the excess toothpick. Align the balls so that each one hits a different string.
8. Eyes, feet and other accessories are glued in place at this time.

Of course these steps are explained in greater detail in our project plans available at right.

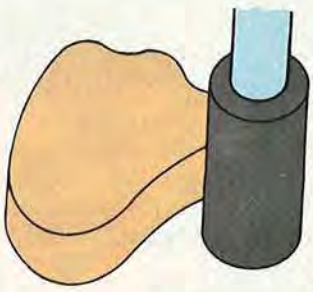
By the way, I think you will find that our plans are the best available anywhere! All professionally drawn. You get FULL SIZE drawings which are easy to transfer directly to your stock. Each plan includes detailed step-by-step instructions. Our hardware kits contain the hard-to-get parts including the special high resonance plywood, tuning pins, music wire, clapper balls, as well as parts unique to each project such as animal eyes. Kits do **NOT** include the plan, paint, string, or miscellaneous 3/4″ stock. Make one of these cheerful door harps for your home. **Order the plan, the hardware kit, and one of each paint color specified.**



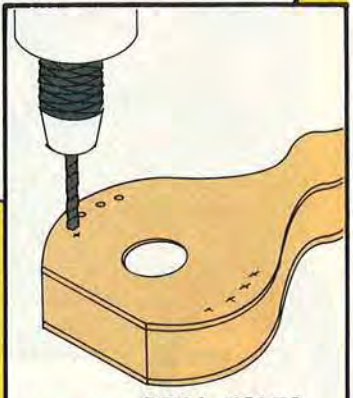
1. TRANSFER THE PATTERNS



2. CUT THE HARP BODY TO FINAL SHAPE

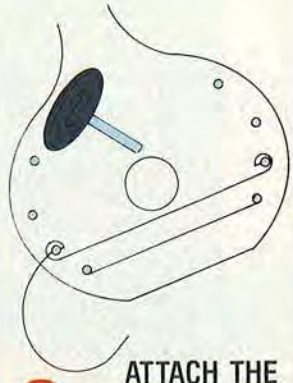


3. DRUM-SAND THE EDGES SMOOTH

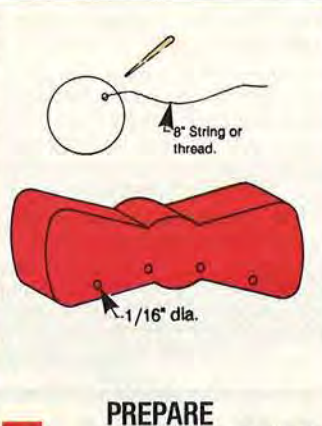


4. DRILL HOLES FOR THE TUNING PINS

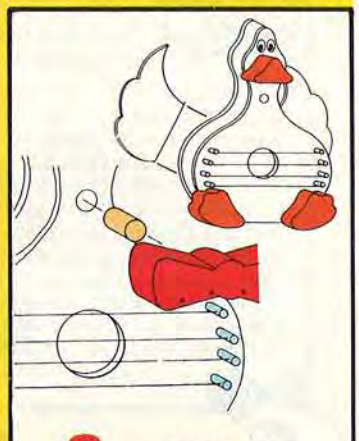
5. PAINT ALL THE PARTS



6. ATTACH THE TUNING PINS AND WIRE



7. PREPARE CLAPPER BALLS & CLAPPER BOARD



8. GLUE ON FEATURES

DOOR HARP PLANS & HARDWARE KITS

DOOR HARP PLANS

All project plans are drawn FULL SIZE on large blueprint sheets. Recommended paint colors are listed below each plan. Order these paints for **$1.99**/EA 2 oz. bottle. Order Hardware Parts Kits below right.

#W263 Raccoon Door Harp Plan **$3.99/EA**
#72435 Burnt Sienna, #72453 Wicker, #72447 Soft Black

#W264 Panda Door Harp Plan **$3.99/EA**
#72447 Soft Black, #72428 Off White, #72449 JoSonja Red

#W265 Owl Door Harp Plan **$3.99/EA**
#72435 Burnt Sienna, #72453 Wicker

#W266 Frog Door Harp Plan **$3.99/EA**
#72410 Mellow Yellow, #72577 Holiday Green, #72447 Soft Black

#W267 Hog Door Harp Plan **$3.99/EA**
#72582 Flesh, #72409 Pink Blossom, #72447 Soft Black

#W310 Hen Door Harp Plan **$3.99/EA**
#72561 Soft White, #72453 Wicker, #72432 Sunkiss Yellow, and #72449 JoSonja Red

#W316 Barn "Kicker" Door Harp Plan **$3.99/EA**
#72412 Blue, #72476 White, #72447 Black, #72474 Green, and #72424 Red

#W373 Small Bessy Door Harp Plan **$3.99/EA**
#72476 Real White, #72477 Real Black, #72409 Pink Blossom

#W251 Goose Door Harp Plan **$3.99/EA**
#150 Soft White, spray **$3.29**/EA, #72318 Dijon Gold, #72449 JoSonja Red

#W404 Tiger Tomcat Door Harp Plan **$3.99/EA**
#72502 Iced Tea, and #72477 Real Black

#W306 Federalist Eagle Door Harp Plan **$3.99/EA**
#72472 Blue, #72470 Red, #72476 White, #72447 Black, #72471 Yellow, and #72406 Dk. Brown

#W312 Big Apple Door Harp Plan **$3.99/EA**
#72577 Hol. Green, #72449 JoSonja Red, #72476 Real White, and #72422 Brick

Any five or more Door Harp Plans **$3.50/EA**

DOOR HARP HARDWARE PARTS KITS See description on opposite page.	1-4 Kits	5 or more Kits (mix or match)
#7765 Raccoon Door Harp Hdw. Kit	$6.50/EA	$5.85/EA
#7770 Panda Door Harp Hdw. Kit	$6.50/EA	$5.85/EA
#7767 Owl Door Harp Hdw. Kit	$7.50/EA	$6.75/EA
#7768 Frog Door Harp Hdw. Kit	$6.50/EA	$5.85/EA
#7769 Hog/Hen Door Harp Hdw. Kit	$6.25/EA	$5.65/EA
#8255 Barn "Kicker" Door Harp Hdw. Kit	$8.39/EA	$7.55/EA
#8850 Small Bessy Door Harp Hdw. Kit	$7.50/EA	$6.75/EA
#7640 Goose Door Harp Hdw. Kit	$6.25/EA	$5.65/EA
#8680 Tiger Tomcat Door Harp Hdw. Kit	$7.95/EA	$7.15/EA
#8227 Federalist Eagle Door Harp Hdw. Kit	$7.00/EA	$6.30/EA
#8252 Big Apple Door Harp Kit	$7.25/EA	$6.55/EA

ANOTHER AMERICAN LOVE AFFAIR

Wood yard ornaments. You've seen them around for decades but it seems like no one paid much attention to them until recently. Now, in front yards and back yards across America people are displaying cows, pigs, and even the rear views of people bending over! Why the sudden interest? It's the latest American fad!

Personalize your lawn by making your own yard ornaments. Most designs are available in two sizes to fit your lawn or garden.

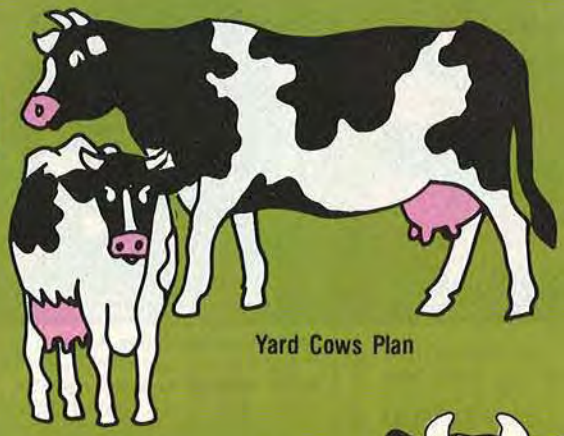
You'll start by transferring the blueprint design to a sheet of plywood. Use either carbon paper or our special pattern transfer kit (which is even faster and easier than carbon paper). The pattern transfer kit contains a tool with a perforated wheel. You simply roll the tool around the lines on your pattern sheet and the wheel punches a small hole in the pattern about every 1/16 inch. Finish by dusting with the powdered chalk provided in the kit. The image will be clearly marked on your plywood and your plan can be used over and over again.

All of our yard ornaments are easy to cut from standard exterior plywood. A sabre saw is all that's needed. After sawing, round over the edges of the plywood with a file, sandpaper or even a router with a 1/8" radius round-over bit.

Either latex or enamel paints may be used to paint the plywood. The patterns are designed to be easy to paint. You'll be getting complete painting instructions with your plan.

Order the plans, the transfer kit, and special mounting stakes directly from this insert.

Coyote Plan



Yard Cows Plan

Mushroom Mamma Plan

Gloria Peterbuilt Plan

Cows (Back View) Plan

YARD ORNAMENT PLANS

#W335 Large Coyote Plan 40" high $7.99/EA

#W336 Small Coyote Plan 20" high $3.99/EA

#W235 Yard Cows Plan 40" high $11.99/EA

#W407 Large Mushroom Mamma Plan 40" high $7.99/EA

#W408 Small Mushroom Mamma Plan 20" high $3.99/EA

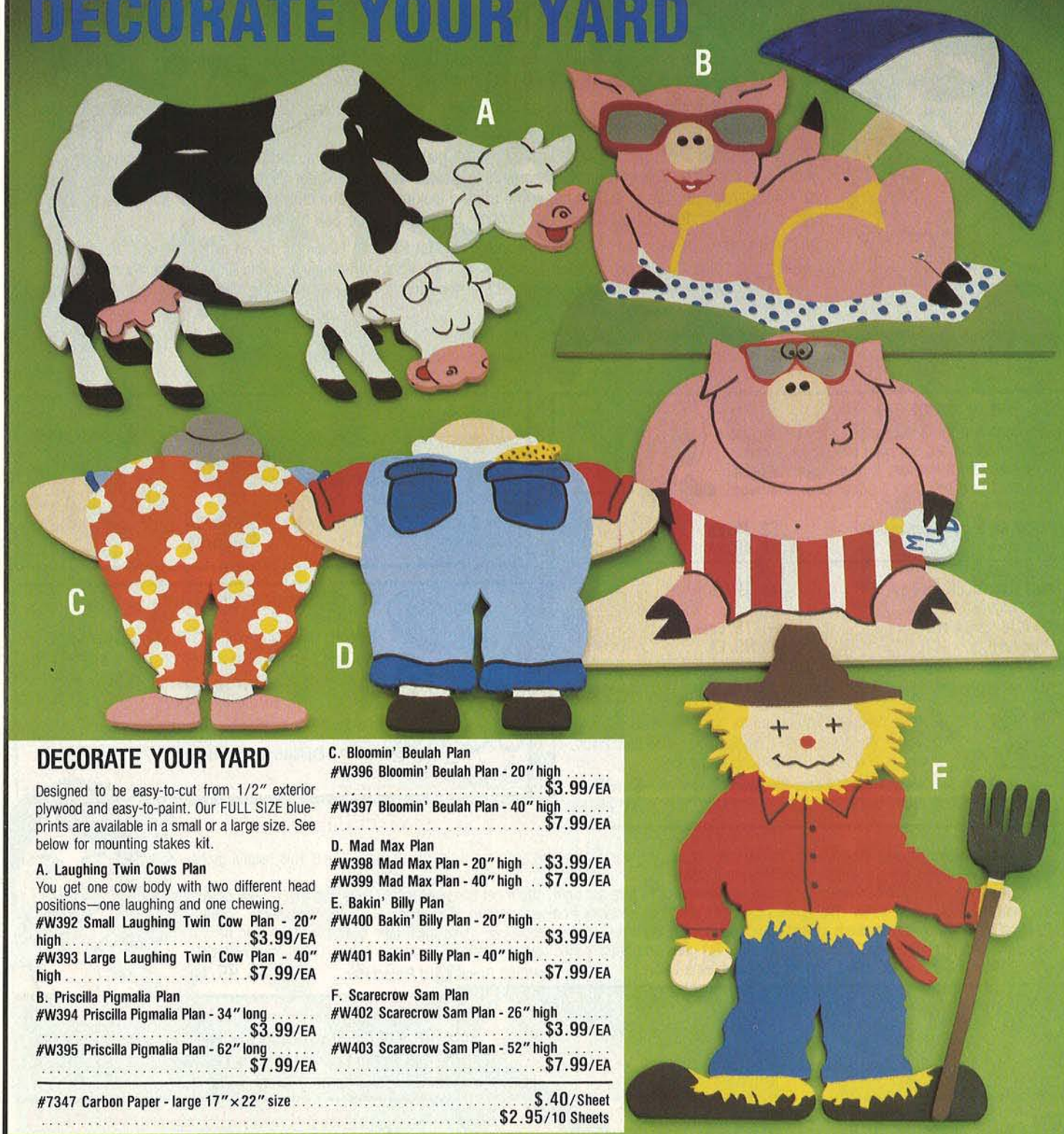
#W405 Large Gloria Peterbuilt Plan 40" high $7.99/EA

#W406 Small Gloria Peterbuilt Plan 20" high $3.99/EA

#W347 Large Backview Cows Plan 40" high $7.99/EA

#W348 Small Backview Cows Plan 20" high $3.99/EA

DECORATE YOUR YARD



DECORATE YOUR YARD

Designed to be easy-to-cut from 1/2″ exterior plywood and easy-to-paint. Our FULL SIZE blueprints are available in a small or a large size. See below for mounting stakes kit.

A. Laughing Twin Cows Plan
You get one cow body with two different head positions—one laughing and one chewing.

#W392 Small Laughing Twin Cow Plan - 20″ high **$3.99/EA**
#W393 Large Laughing Twin Cow Plan - 40″ high **$7.99/EA**

B. Priscilla Pigmalia Plan
#W394 Priscilla Pigmalia Plan - 34″ long **$3.99/EA**
#W395 Priscilla Pigmalia Plan - 62″ long **$7.99/EA**

C. Bloomin' Beulah Plan
#W396 Bloomin' Beulah Plan - 20″ high **$3.99/EA**
#W397 Bloomin' Beulah Plan - 40″ high **$7.99/EA**

D. Mad Max Plan
#W398 Mad Max Plan - 20″ high . . **$3.99/EA**
#W399 Mad Max Plan - 40″ high . . **$7.99/EA**

E. Bakin' Billy Plan
#W400 Bakin' Billy Plan - 20″ high **$3.99/EA**
#W401 Bakin' Billy Plan - 40″ high **$7.99/EA**

F. Scarecrow Sam Plan
#W402 Scarecrow Sam Plan - 26″ high **$3.99/EA**
#W403 Scarecrow Sam Plan - 52″ high **$7.99/EA**

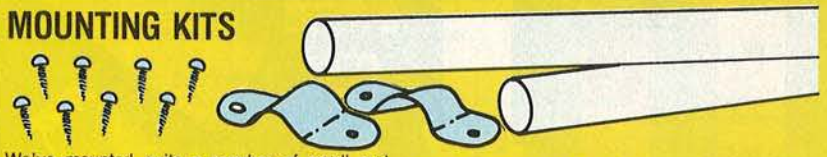
#7347 Carbon Paper - large 17″×22″ size . . . . . **$.40/Sheet**
. . . . . **$2.95/10 Sheets**

COPY CAT PATTERN TRANSFER KIT

This is the slickest, fastest, easiest and least messy way to transfer project plans to your stock! Kit contains a tool with a perforated wheel and a special pouch with powdered chalk. You simply follow the lines on your pattern and the special tool punches small holes in the pattern about every 1/16″. Finish by dusting with the special powdered chalk. Once perforated, your pattern can be used over and over. Eliminates the need for carbon paper.

#8665 Copy Cat Transfer Kit **$17.95/EA**

MOUNTING KITS



We've mounted quite a number of small and large yard ornaments across America. We found that simple 2″×2″ stakes work best for the larger yard ornaments; but for the small yard ornaments, the only way to go is to use fiberglass rods. Super tough white fiberglass rods will flex just a little, but won't break, rot, rust, chip or peel. Rods are 36″ long.

Mounting Kit for Small Yard Ornaments
Includes 2 rods, 4 zinc plated clamps, and 8 mounting screws—enough for one **small** yard ornament.

#8675 Mounting Kit for Small Yard Ornaments
1-9 . . . . . **$4.29/KIT**
10 or more **$3.99/KIT**

A TASTE OF COUNTRY (WITHOUT THE SMELL)

Five years ago you probably wouldn't have thought **cows** would be the rage; but you might be interested to know that these cow plans are now among our most popular plans.

More than just another "pretty face", cows represent one of those rare fads that seem to be able to happen only in America. Everyone seems to be falling in love with cows!

You'll find them a snap to make in your shop. All plans use only common sizes of lumber or plywood. And you'll find that each cow project does something **useful.** Well, all except for maybe "Long Tall Bessy"—but she's so silly it's enough to just let her stand around looking cute. The other Bessies either fly, serve as a door stop, a planter, a door bell, a mug rack, a music box, or a tissue box holder.

All this and a pretty face too! An easy-to-make face that you don't have to be an artist to paint. You start by painting the entire project white, then paint some black spots wherever you feel like, and finally paint a pink nose. The plastic eyes and nostrils eliminate the need for any detailed painting. You simply drill a 1/4" hole and press the eyes and nostrils in place. It's so easy!

In addition to the plans, you can order the special hardware kits below. Order #72476 Real White, #72477 Real Black and #72409 Pink Blossom paints for all cow projects. (2 oz. bottle $1.99/ea.). Get moo-ving—order plans and supplies NOW!

Big Bessy Hardware Kit

This Hardware Kit is used for all the Big Bessy projects and eliminates the need for painting difficult facial features. It includes 2 plastic eyes, 2 plastic nostrils, 1 cow bell, and 4 udder pegs. The wood and paint are not included.

#8617 Big Bessy Hardware Kit **$2.79/EA**
10 or more **$2.49/EA**

CORN COB PIPE
#8671 Corn Cob Pipe 3½" **$1.19/EA**
6" STRAW HAT
#8670 6" Straw Hat **$1.19/EA**
12 or more . . . . . **$.99/EA**

Musical Bessy Hardware Kit

You get the plastic eyes, nostrils, cow bell, music box, hinge, turnbuttons, sawtooth hanger, and miscellaneous fasteners. Plan, wood, and paint are not included in the kit.

#8622 Musical Bessy Hardware Kit . . **$3.95/EA**
10 or more **$3.55/EA**

SMALL BESSY HARDWARE KIT

This hardware kit is used for all the Small Bessy projects. You get 2 eyes, 2 nostrils and 1 cow bell. Plans, wood and paint not included in the kit.

#8621 Small Bessy Hardware Kit **$1.39/EA**
10 or more **$1.29/EA**

Flying Bessy Hardware

Enough hardware to build 3 Flying Bessy projects. You get a roll of nylon string, 22 split shot sinkers, 3 wood dowels, 3 jump rings, and 6 jiggle eyes. Wood, paint and plans are **NOT** included in this hardware parts kit.

#8618 Pull String Flyer Hdw. Kit **$2.99/EA**

GROCERY LIST PROJECT PLAN

Low on Chicken Noodle Soup? If you're like most of us, you'll forget to pick some up if you don't make a list! This helpful grocery list holder will provide a convenient place to write it down.

A practical project you can make for use in your home or to give as a gift. You'll get complete instructions and FULL SIZE blueprints for every project shown below. The grocery list pads (available separately below) come in an economical pad of 500 sheets. Simply tear off about 50 sheets for each project. Quick enough so even really busy people can make them (one or two hours should be enough—pick a night when TV is lousy). Grocery list pads and brass plated carriage bolts are available below. (Also, for cow order Small Bessy hardware kit above, and for pig order eyes below.)

#W500 Grocery List Project Plan **$3.99/EA**

4 Plans in One Plan

GROCERY LIST PADS (500 Sheets/Pad)

#14P Buff Country Grocery List Pad **$7.99/EA**
#7430 Peach Country Grocery List Pad **$7.99/EA**
#8228 White Country Grocery List Pad **$7.99/EA**

BRASS PLATED CARRIAGE BOLTS

Decorative brass wing nuts and bolts are the best way to hold grocery list pad in place. Order one set of 2 for each grocery list project.

#CB Carriage Bolts . . . . . **$.52/SET of 2**
. . . . . **$4.56/10 SETS of 2**
. . . . . **$20.50/50 SETS of 2**

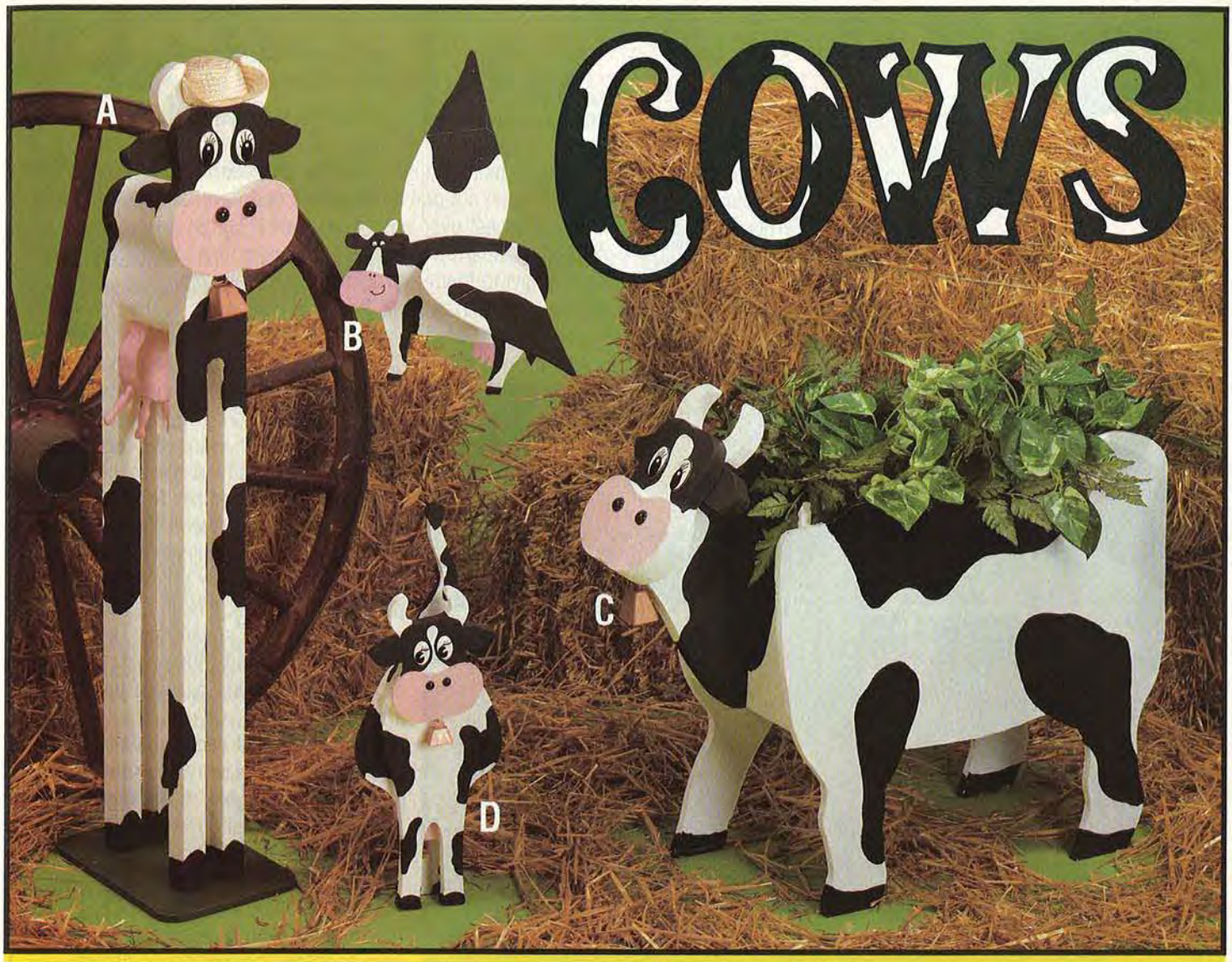
BRASS EAGLES

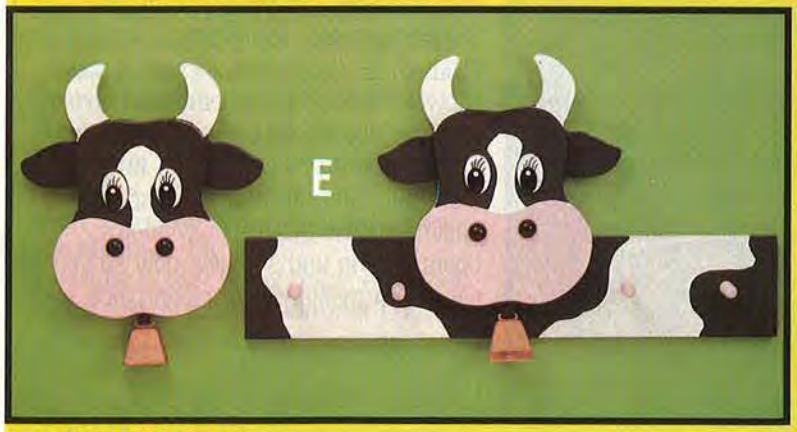
#878 Brass Eagle 2-1/8" wing span . . **$2.75/10**

PIG EYES

#88010 10mm 3/8" Jiggle Eyes . . . **$1.70/144**

COWS





A. Long Tall Bessy Plan

Everyone who sees this long tall lady falls in love. She stands 40″ tall and is made from a length of "2 x 4" and some 3/4″ stock. Big Bessy Hardware Kit, straw hat and optional corn cob pipe available on opposite page.

#W343 Long Tall Bessy Plan **$3.99/EA**

B. Flying Bessy Plan

This flying cow is a one-of-a-kind speciman. Balanced just right so when you pull the string she continues to flap her wings several times in a slow, graceful motion. Can be cut from 1/4″ plywood. Nylon string, split shot sinkers, key ring and eyes available on opposite page.

#W362 Pull String Cow Plan **$3.99/EA**

C. Planter Box Bessy Plan

It's a planter or a magazine rack! This Big Bessy stands 25″ tall. The body is made from 1/2″ plywood. Some 3/4″ stock is required for the head. Order Big Bessy Hardware Kit on opposite page.

#W345 Planter Box Bessy Plan **$6.99/EA**

D. Door Stop Bessy Plan

This Bessy stands 20″ tall and makes a great door stop. Very easy to make from 3/4″ pine. Order Small Bessy Hardware kit on opposite page.

#W409 Door Stop Bessy Plan **$3.99/EA**

E. Door Ringer/Mug Rack Bessy Plan

Door Ringer Bessy mounts on your front door. Tie a cord to Bessy's genuine cow bell and your guests can announce their arrival. Mug Rack Bessy mounts in your kitchen. Order Big Bessy Hardware Kit from opposite page.

#W344 Door Ringer and Mug Rack Bessy Plan **$3.99/EA**

F. Musical Bessy Plan

Push this Holstein's head and you set off an electronic music box which plays "Old MacDonald." Very easy to make from 3/4″ stock and 1/8″ plywood. Musical Bessy Hardware Kit available on opposite page.

#W410 Musical Bessy Plan **$2.75/EA**

G. Tissue Box Bessy Plan

This small Bessy holds a box of tissues. A snap to make from 3/8″ plywood. Finished project stands 12-1/2″ tall. Order Small Bessy Hardware Kit on opposite page.

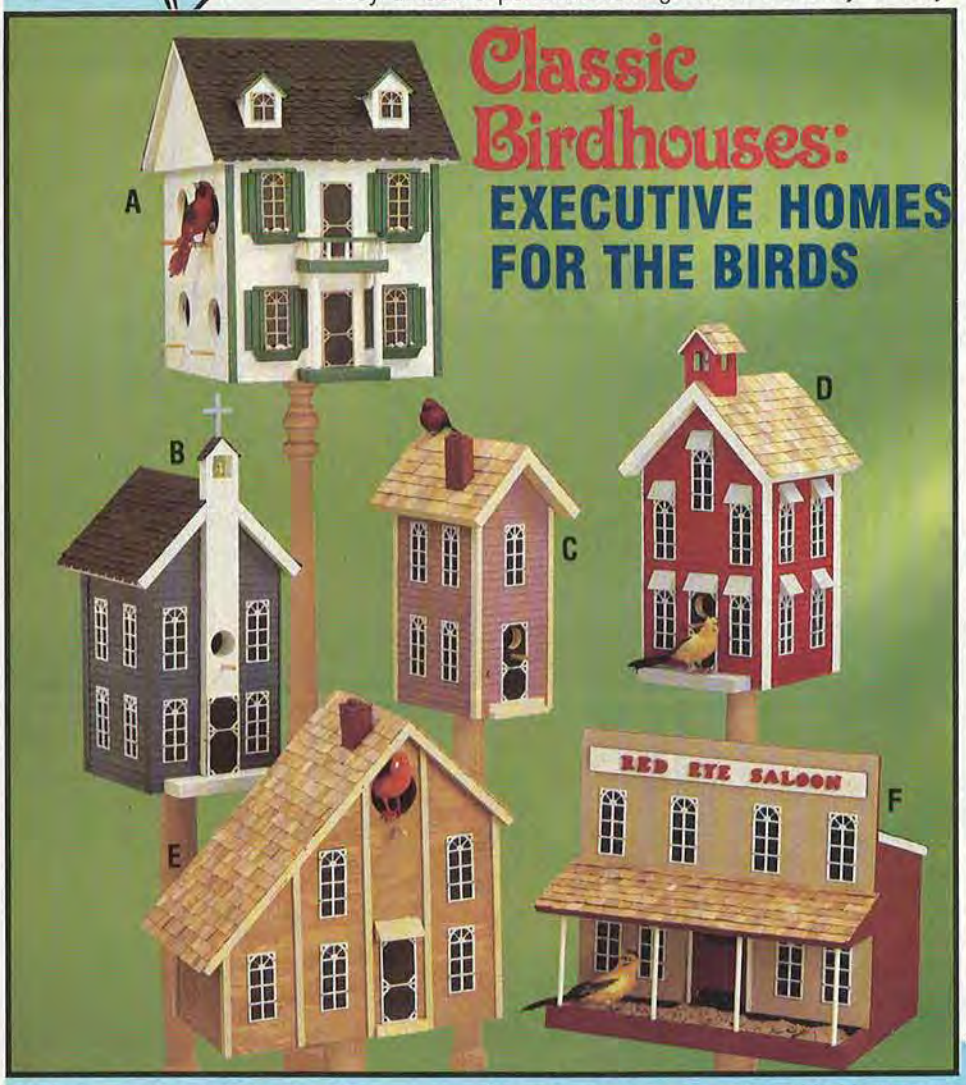
#W411 Tissue Box Bessy Plan **$3.99/EA**

BUILD A BETTER BIRDHOUSE AND THE BIRDS WILL BEAT A PATH TO YOUR DOOR.

So beautiful, so breathtaking—after you finish making your first house, you're sure to get many compliments.

Birds may not care much about a classy-looking house, but they do need a place to build a nest and raise their young. As humans continue to cut down more trees and pave more parking lots, birds need help. This summer I had a Robin's nest over each of my porch lights, a Barn Swallow nest over my back door, and to top it all off, a Sparrow built her nest inside my canoe! Now you can help the birds in your neighborhood by giving them a proper place to call home.

I think you'll agree that our birdhouses look sensational! Part of the secret is in the decorative windows and doors. The doors don't open and the windows aren't designed to let light in, but they do add a perfect finishing touch. And they're easy to install—you simply nail them in place. Some houses (see B, C and D) even have clapboard siding. One bundle of siding covers over 5 sq. ft.—more than enough to cover any of the birdhouses shown which use siding. Miniature shingles also help to lend that realistic look. Either asphalt shingles or hand split cedar shakes are available. One package of the hex design asphalt shingles covers 3 square feet of roof. Asphalt shingles are quite easy to staple or nail in place. One package will cover any house shown. Or you might prefer our real hand split cedar shakes which can be glued in place with hot melt or other waterproof glue. A package of 1000 cedar shakes covers approximately 4 square feet of roof.



You can search the entire country, but I don't think you'll find better birdhouse plans. You'll be getting large easy-to-follow, professionally drawn blueprint sheets. Everything is drawn FULL SIZE. Plans even include a chart showing various hole diameters needed to attract the species of bird you want.

Order today—you'll want to get them built and up in time for spring nesting. Order the plans, windows, doors, siding and shingles now so you can begin making your masterpiece.

PLANS FOR BIRDHOUSES AND A BIRDFEEDER

A. #W333 Colonial Martin House (8 unit) Plan $8.99/EA
B. #W332 Wing-Chester Cathedral Plan $8.99/EA
C. #W329 Wren Row-House Plan $8.99/EA
D. #W331 Sleepy Hollow Schoolhouse Plan ... $8.99/EA
E. #W334 Tylorville Tudor Apartments Plan ... $8.99/EA

BIRDFEEDER PLAN

F. #W369 Red Eye Feed & Seed Plan $8.99/EA

SAVE

Mix or match 3 or more plans above $6.99/EA

BIRDHOUSE HARDWARE PARTS

WINDOWS & DOORS

#8607 Birdhouse Window 1-1/2"×3-1/2"
1-9 ..... $1.29/EA
10-49 ..... $1.09/EA
50 or more ..... $.89/EA

#8606 Birdhouse Door 2"×4-1/2"
1-5 ..... $1.99/EA
6-19 ..... $1.69/EA
20 or more $1.49/EA

#388 Mounting Pins for Windows & Doors ... $1.25/100

CEDAR SHAKES

#7688 Cedar Shakes Pkg. of 200 ..... $3.95/PKG
#7687 Cedar Shakes Pkg. of 1000 .... $15.95/PKG

ASPHALT BIRDHOUSE SHINGLES

#8673 Black Asphalt Shingles (3 sq. ft.) $11.95/ROLL

CLAPBOARD SIDING

#8694 21 linear feet (5.2 sq. ft.) Clapboard Siding ... $12.39/BUNDLE
#8695 42 linear feet (10.4 sq. ft.) Clapboard Siding $22.26/BUNDLE

For this report we took a top-to-bottom look at 16 machines in the $280–$1,850 price range—so much equipment that the *WOOD*® magazine testing area overflowed with machinery. We concentrated our efforts on 10″ tablesaws—the heart of the home woodworking market.

Contractor's style ($345–$980)

A few years after Delta introduced its contractor's saw in 1970, Taiwanese manufacturers began busily churning out copies of this successful model. Nowadays, companies as varied as Sears, Grizzly, and Powermatic sell similar machines.

The illustration at *right* of the Delta contractor's saw reveals heavier motor, blade, tilt, and elevation supports, than those found on direct-drive machines. The motor hangs out the rear of the saw for easy removal, making the machine suitable for on-the-go and home workshop use. A belt softens the vibration of the motor and absorbs some sawing stress.

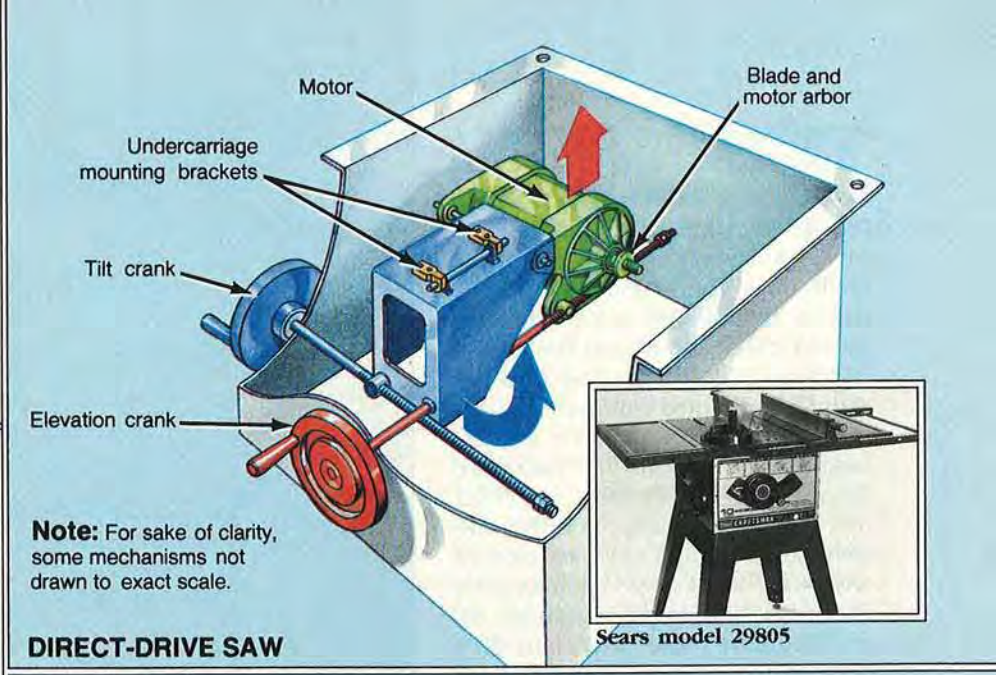
Cabinetmaker's style ($850–$1,850)

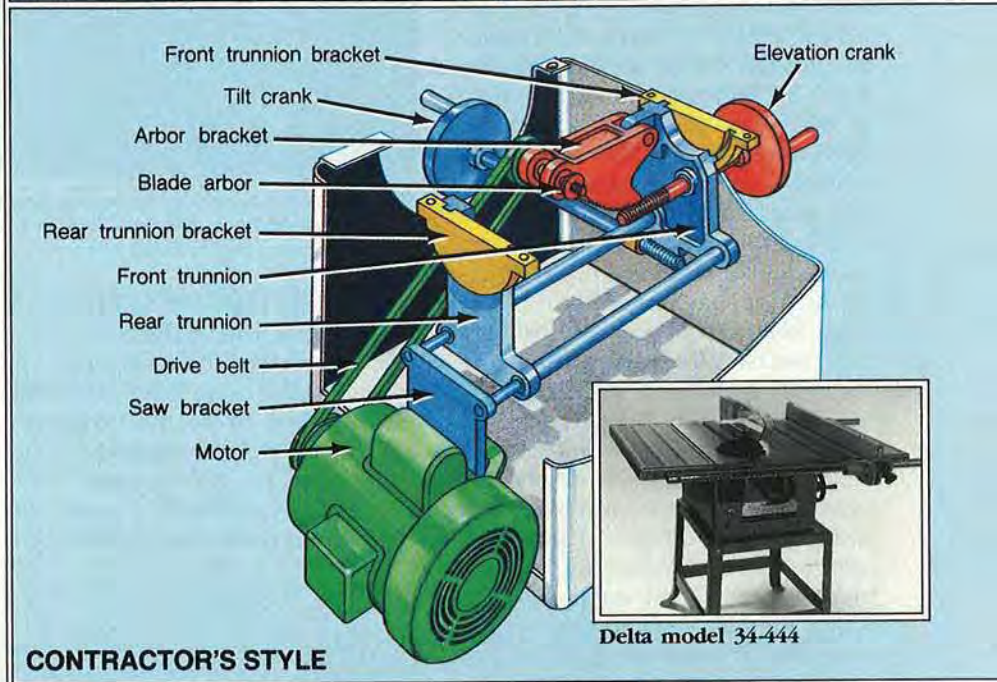
Weighing in at around 450 pounds, these heavyweight contenders have massive cast-iron tilt and elevation controls as typified by the inner workings of the Jet CTAS-10-1 shown at *right*. All that weight translates to stout positioning of the blade at any height or angle, excellent vibration absorption, and longer machine life.

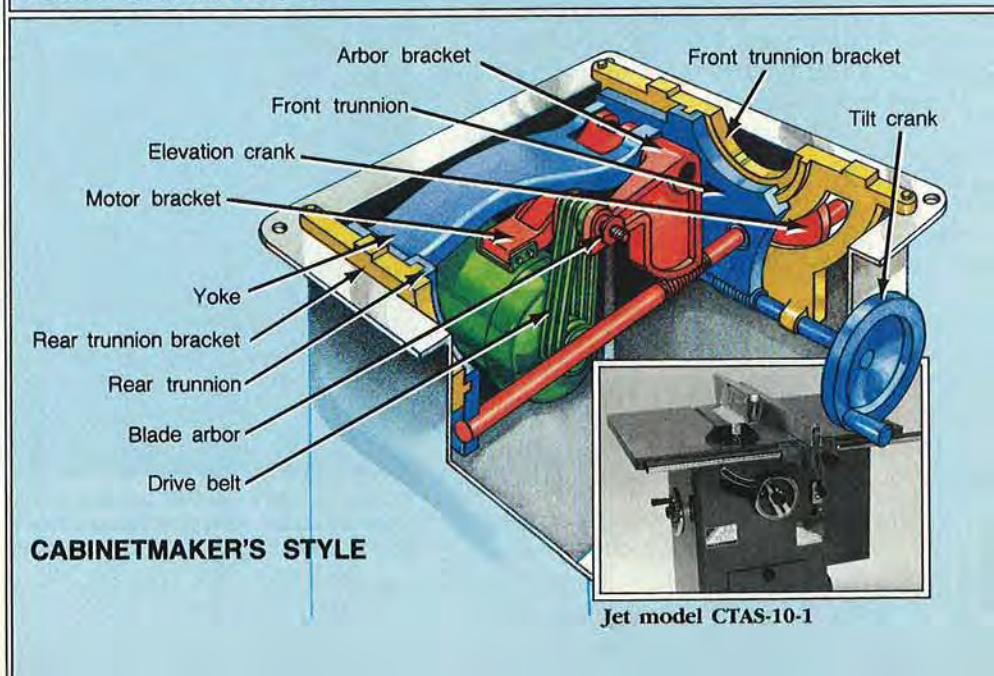
Unlike the other two types of saws, the machine's cabinet (rather than its tabletop) supports the undercarriage assembly, allowing you to easily remove the table for transport. To align the miter-gauge slot parallel with the blade, you simply loosen four corner bolts and adjust the table accordingly.

Remember that most of these saws require 220 voltage—a consideration if you don't already have this service in place. However, Delta's 1½ hp version of the Unisaw operates on either 110 or 220 volts.

Continued







TABLESAWS

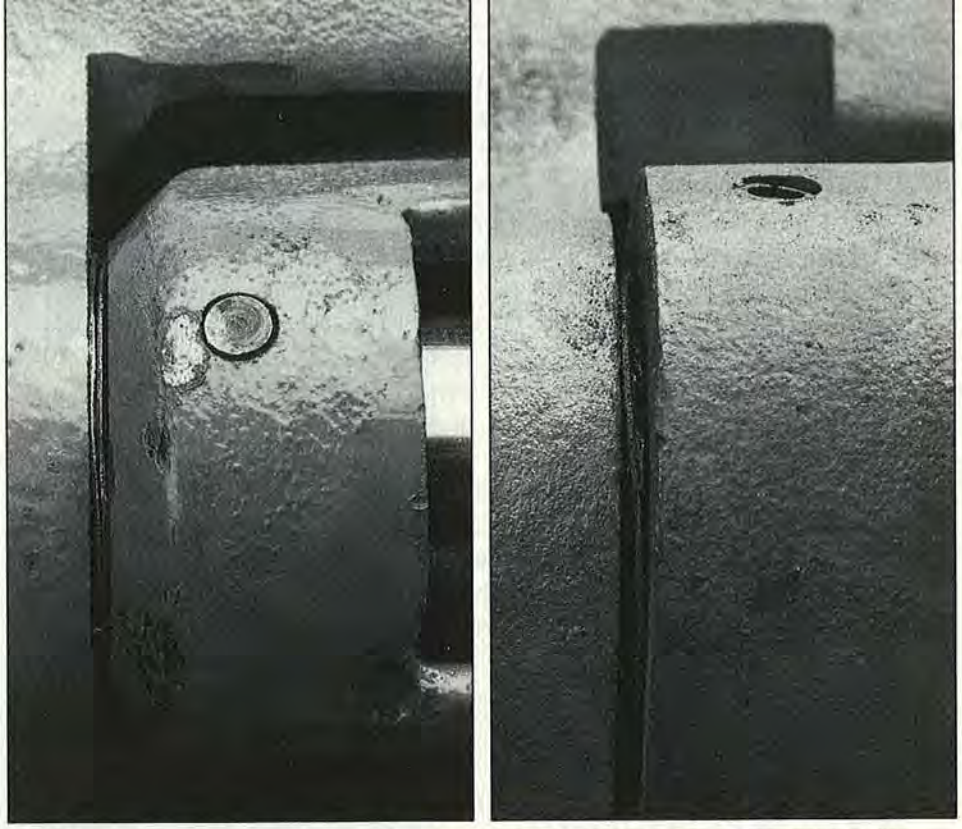
LOOK FOR WELL-MACHINED PARTS INSIDE AND OUT

Just as you would check the alignment of a car's hood, doors, and fenders before buying, you likewise should check the fit and finish of a tablesaw. For starters, the tabletop should be milled smooth and its underside shouldn't have casting sand hidden beneath the paint. We found some casting sand under all the tabletops we inspected, but the General 350-1 had the least sand of any of the saws. Signs such as poor fit, finish, and inferior castings often indicate poor workmanship throughout the saw.

To check the machine's inner mechanisms for fit, set the blade for a 20°–30° bevel cut, then take hold of the arbor and motor assembly and shake it. If this assembly moves, you can bet the tilt or elevation gears have some play in them. This condition can result in poor-quality cuts because of blade movement. Also, any movement in the gears will prevent you from obtaining consistently accurate cutting angles and blade depths.

Slop in other undercarriage parts could cause this kind of movement, too. For example, we detected a gap between the motor bracket and yoke of the Jet CTAS-10-1 as shown *above right*. The spring washer placed there didn't come close to filling the gap. On the other hand, a look at the same mechanism on a similar Delta Unisaw revealed tight-fitting parts (also in photo *above*). Additionally, the Unisaw had an extra washer to snugly fill the gap.

You can quickly solve the problem we found on the Jet saw. And, since Taiwanese-made machines often cost hundreds of dollars less than North American-made tablesaws, such adjustments might pay off if you're mechanically inclined. For example, *WOOD* magazine's tool consultant, George Granseth, discovered the same gap on his Grizzly G1023. He quickly fixed it by placing two thin, U-shaped aluminum shims in the gap. Thousands of board feet later, George's saw still runs like a champ.



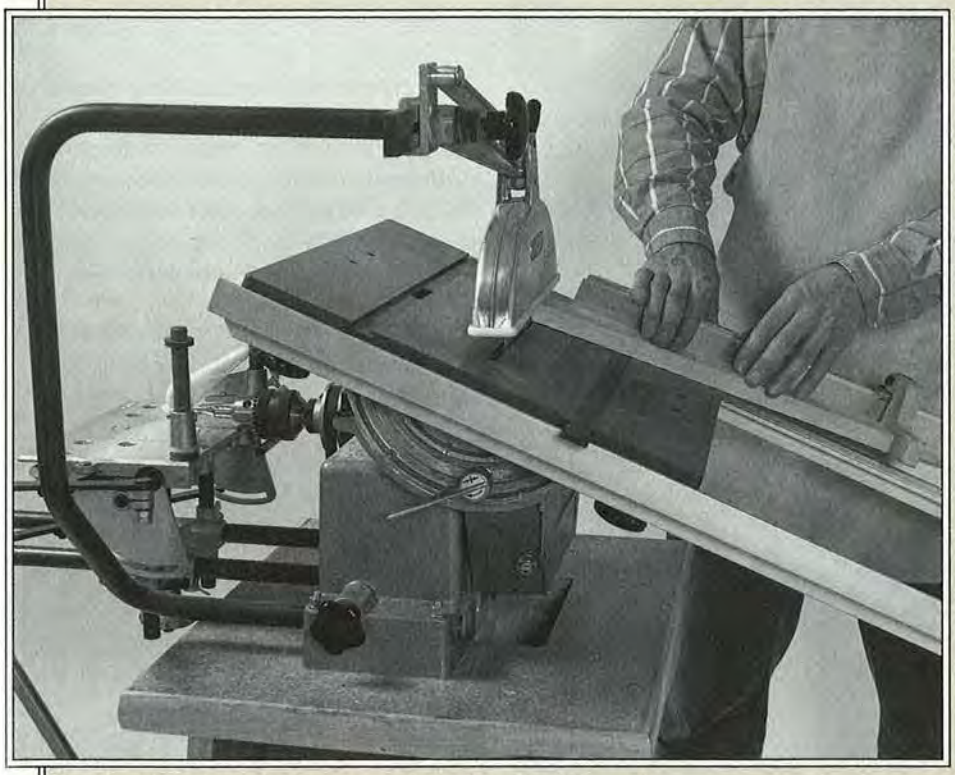
We discovered a tight yoke/motor bracket assembly (*left*) on the Delta 34-763. The similar assembly on the Jet CTAS-10-1 had a gap as shown at *right*.

MOTORS: THE MUSCLE IN THESE MACHINES

The last thing you want while ripping a board is to have the blade slow down or stall altogether. That's why we recommend a motor of at least 1½ horsepower. You'll also be better off with a totally enclosed, fan-cooled motor that prevents dust from being drawn into the motor.

If you use a tablesaw so much that you will some day wear out its motor, take a look at the saw's motor-mounting system. You'll want a saw with universal mounting brackets that will accept most replacement motors—not just the

Thanks to the universal bracket shown at *right* on the General 350-1, you can replace its motor with any motor. That's not that case with the welded-flange bracket on the Delta 34-763, *above*, that accepts only Delta motors.



Inca's tilting-table tablesaw: precision at a healthy price.

A SAW WITH A DIFFERENT SLANT ON THINGS

Before the advent of tilting arbor tablesaws during the late 1930s, most saws consisted of a fixed blade around which a table tilted for bevel cuts. Today, the Swiss-made Inca model 250 continues the tilting-table tradition in a precision-made, compact saw that fits the needs of craftsmen who work with smaller pieces of solid stock.

We found the machine to be accurate and we appreciate the unobtrusive manners of its swing-arm blade guard. Unlike a splitter-guard, the swing-arm variety doesn't block your line of sight and moves out of your way with ease.

However, we found bevel-ripping large sheet goods a cumbersome task. And, the machine isn't cheap: Outfitted with a motor, stand, horizontal borer, and other options as shown at *left,* the Inca sells for more than $1,800.

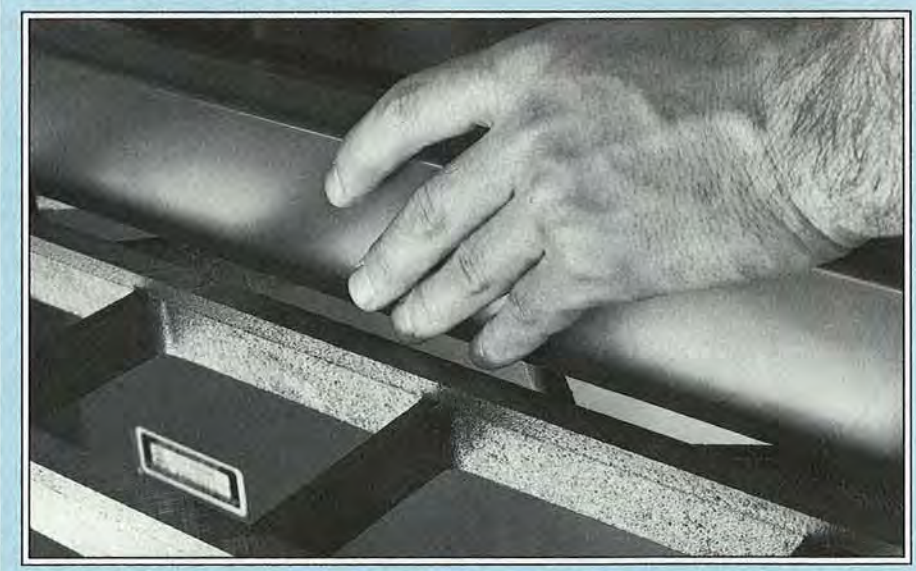
saw manufacturer's motor. For example, the General 350-1 universal bracket shown *below* accepts most motors. However, the bracket on the Delta 34-763 shown *below left,* accepts only Delta motors. The problem? A Delta motor can cost nearly twice as much as a motor from another manufacturer.

TABLE TALK: MORE POINTS TO CONSIDER

Dust control: It's no easy matter to place a dust collection system on a tablesaw because of its tilting/elevating arbor. Nevertheless, two manufacturers have succeeded in this regard: both the Kity 100618 and the Powermatic 63 have dust shrouds. By surrounding the blade, these shrouds funnel sawdust and chips into a dust-collection port.

Extension tables: Although cast-iron extensions weigh more, you'll appreciate their sturdiness over the flex found in formed-steel extensions. Among cast-iron wings, the good looks of solid extensions goes more than skin deep: They can't hurt your fingertips as the grate-type can (see photo *below*).

Continued



When adjusting the fence for various ripping widths, you can pinch your fingers in grate-type extensions. Ouch, that hurts!

TABLESAWS

Sliding tables: It used to be that you could only have a sliding table if it came standard on your saw, and only two affordable models offered you that choice: the Kity 100618 or the Makita 2711 shown at *right*. Now, both Kity and Robland (a Belgian manufacturer of combination machines) make sliding tables that will adapt to most tablesaws. After using the Kity sliding table in the *WOOD* magazine shop, we're mighty excited about these new developments. Why? These accessories greatly increase your control on miter cuts, especially on large pieces of stock such as sheet goods.

RIPPIN' GOOD SPECS FOR 10" TABLESAWS

MANUFACTURER/IMPORTER	MODEL	STYLE[1]	CUTTING DEPTH (INCHES)		FENCE				TABLE				MOTOR								
			BLADE AT 90°	BLADE AT 45°[2]	RIP CAPACITY (INCHES)	FENCE MATL.[3]	RAIL MATL.[3]	MAX. DADO WIDTH (IN)	MATERIAL[4]	EXTENSION MATERIAL,TYPE[4]	SIZE (INCHES)	SIZE WITH EXTENSIONS (INCHES)	CONTROL SWITCH[5]	TYPE[6]	AMPS	VOLTS	CONT. HP	COUNTRY OF ORIGIN[7]	WEIGHT (POUNDS)	LIST PRICE[8]	SELLING PRICE[9]
AMT	4570#	CON	3⅛	2⅛-R	23	EA	TS	13/16	CI	CI, G	20⅛ x 27	40⅜ x 27	MAN	TEFC	18/9	115/230	1½	T	231	N/A	445
Delta	34-740	DIR	2 7/16	1 11/16-R	25	S	TS	13/16	CI	FS	20⅜ x 22¼	38¾ x 22¼	MAN	ODP	10	115	1	T	152	519	430
	34-444	CON	3⅛	2⅛-R	25	S	TS	13/16	CI	FS	20 x 27	40 x 27	MAN	TEFC	20/10	115/230	1½	US	260	844	650
	34-429	CON/ CAB	3⅛	2⅛-R	25	EA	TS	13/16	CI	CI, S	20 x 27	36 x 27	MAN	TEFC	20/10	115/230	1½	US	322	1479	1200
	34-763*	CAB	3⅛	2⅛-R	25	EA	TS	13/16	CI	CI, S	20 x 27	36 x 27	24V MAG	TEFC	17	230	3	US	464	1875	1660
Foley-Belsaw	490**	CON	3½	2 9/16-L	25	S	FS	13/16	CI	CI, S	18 x 27	40 x 27	MAN	ODP	16	115	1¾	US	335	N/A	899
General	350-1***	CAB	3⅛	2⅛-R	25	S	TS	13/16	CI	CI, S	20 x 28	36 x 28	MAG	TEFC	14	230	3	C	475	N/A	1380
Grizzly	G1023	CAB	3⅛	2¼-R	26	S/L	TS	5/8	CI	CI, S	20 x 27	36 x 27	MAG	TEFC	18	230	3	T	420	N/A	850
Inca	250	TT	3 5/32	2⅛-R	23¼	EA	EA	13/16	AA	AA, S	16½ x 20⅜	4 x 20⅜	MAN	TEFC	16/8	115/230	-	S	150	N/A	1365
Jet	CTAS-10-1	CAB	3	2⅛-R	26	EA	TS	13/16	CI	CI, S	20 x 27	36 x 27	24V	TEFC	17	230	3	T	465	1682	1300
Kity	100618	-	3¼	2¼-R	29	EA	EA	½	AA	FS, S	20½ x 26¾	36 x 26¾	MAG	TEFC	10	230	2	F	146	1495	1495
Lobo	TS1010	CAB	3⅛	2⅛-R	30	EA	EA	13/16	CL	CI, S	20¼ x 27	36¼ x 27	MAG	TEFC	18	230	3	T	375	1449	1155
Makita	2711	DIR	3 9/16	2½-R	24½	S	TS	13/16	CA	L, S	15⅝ x 23½	N/A	MAN	U	12	115	-	J	72	800	500
Powermatic	63	CON	3⅛	2⅛-R	26	EA	TS	13/16	CI	CI, G	20 x 27	40½ x 27	MAN	TEFC	18/9	230	1½	T	300	N/A	650
	66****	CAB	3⅛	2⅛-L	53	S/L	TS	13/16	CI	CI, S	21½ x 28	38 x 28	MAG	TEFC	15	230	3	US	450	2040	1850
Sears	29805	DIR	2½	2 5/16-L	24	S	AI	13/16	CA	FS	17 x 20	37 x 20	MAN	ODP	12	115	1	US	126	N/A	280
	29884	CON	3⅜	2¼-L	24	S	AI	13/16	CI	CI, G	20 x 27	44 x 27	MAN	ODP	13/6.5	115/230	1½	US	248	N/A	500

\# Similar saws sold by Grizzly, Jet, and Total Shop.
* 3 HP model listed; 1½ HP available.
** 1¾ HP model listed; 2 HP available.
*** 3 HP model listed; 2 HP available.
**** 3 HP model listed; 2 and 5 HP available.

1. (TT) Tilting Table; (CAB) Cabinetmaker's style; (CON) Contractor's style; (DIR) Direct-drive; (-) See page 56 for information on Kity.
2. (L) Left-tilt blade; (R) Right-tilt blade.
3. (AI) Angle iron; (EA) Extruded aluminum; (FS) Formed steel; (S) Steel; (S/L) Steel with laminate cover; (TS) Tubular steel.
4. (AA) Anodized aluminum; (CI) Cast iron; (FS) Formed steel. Extension types: (G) Grate; (S) Solid.
5. (MAN) manual; (MAG) Magnetic; (24V) 24-volt remote switch.
6. (TEFC) Totally enclosed, fan-cooled; (ODP) Open, drip-proof; (U) Universal.
7. (C) Canada; (F) France; (J) Japan; (S) Switzerland; (T) Taiwan; (US) United States.
8. (N/A) Not available.
9. Selling price is an estimate based on catalogs and dealer inquiries at time article was produced.

MANUFACTURERS LISTING:

American Machine & Tool Co. (AMT)
215/948-0400

Delta International Machinery Corp.
Outside Pa.: 800-438-2486
Pa. residents: 800-438-2487

Foley-Belsaw
Outside Mo.: 800-468-4449
Mo. residents: 800-892-8789

General Mfg. Co. Ltd.
819/472-1161
We ordered our tablesaw from Sisco Supply in South Burlington, Vt.: 802/863-9036

Grizzly Imports
East of Mississippi River: 717/326-3806
West of Mississippi River: 206/647-0801

Inca
(Available from Garrett Wade)
212/808-1155

Jet Equipment & Tools
Outside Wash.: 800-426-8402
Wash. residents: 206/572-5000

Kity
(Available from Farris Machinery)
800-872-5489

Laguna Tools (Robland accessories)
800-234-1976

Lobo Power Tools
818/350-1096

Makita USA Inc.
714/522-8088

Powermatic
Outside Tenn.: 800-248-0144
Tenn. residents: 615/473-5551

Sears, Roebuck & Co.
Contact your nearest store.

Farris Machinery, the sole U.S. importer of French-made Kity equipment, sells the Kity sliding table for $495. The slightly beefier Robland unit, available through Laguna Tools, sells for $695. Our advice: Before making a purchase, ask the importer about the adaptability of their sliding table to your tablesaw (see the manufacturers listing on the opposite page for toll-free phone numbers).

Fences: Only three of the tablesaws we tested—the Powermatic 66 and 63, and the Foley-Belsaw 490—have fences that set quickly and accurately. Powermatic ships a Biesemeyer aftermarket rip fence and extension table with each model 66 tablesaw. The Biesemeyer fence gives you 50" of ripping capacity. The Powermatic 63 has a smaller, lighter version of a Vega rip fence. Foley-Belsaw designed its own fence (see photo at *right*) that's lighter-duty than a Biesemeyer or Vega, but works just as accurately.

Makita offers a miniaturized, but effective, sliding table on its model 2711.

The fence on the Foley-Belsaw 490 helps you make fast and accurate rip cuts.

Blade position at 45° and 90°: If you prefer using an aftermarket rip fence, you'll want a tablesaw whose ripping capacity doesn't change as the blade tilts. For example, we found that the Powermatic 66, General 350-1, and Delta 34-763 have identical rip widths at 45° and 90°. This precision means you can trust the fence's measurement reading at any angle. For all the other saws, you have to set the fence for accurate 90° cuts and measure the blade-to-fence distance for bevel cuts.

WE COULD SEE THESE SAWS IN OUR SHOP

Under $700: Selling for about $650, the Powermatic model 63 shown *below* packs extra features into a dependable Taiwanese-made machine. Several importers sell a similar saw at a lower price, including AMT, Grizzly, and Jet, but only Powermatic includes a dust-collection shroud and a precision Vega rip fence as standard equipment.

Over $700: Among the cabinetmaker's saws, the Delta 34-763, General 350-1, and Powermatic 66 performed extremely well and would please most any woodworker. The Grizzly G1023 and Jet CTAS-10-1 were just a hair less precise, and a little rougher in fit and finish, but if you can overlook these small faults, the lower price tags may be for you.

All in all, we give the General 350-1, *below,* top grades for its accuracy, finish, and solid construction. We went over this saw with a magnifying glass and couldn't find a flaw worth mentioning.

For less than $700, the Powermatic model 63 has several big-saw features including dust shroud and Vega rip fence.

In accuracy, finish, and quality of craftsmanship, the General led the army of tablesaws we tested.

Written by Bill Krier Technical consultant: George Granseth Illustrations: Kim Downing; Jim Stevenson Photographs: Jim Kascoutas

WHAT YOU SHOULD KNOW ABOUT TOXIC

During the Middle Ages, English archers frequently developed a rash from their yew longbows. Some musicians of the 1930s broke out after playing woodwind instruments—called recorders—crafted of cocobolo. But, don't panic. According to a WOOD® magazine reader and poison expert, your chance of a toxic reaction to one or more domestic wood species is as infrequent as 1 in 100. And, to reduce those odds even more, he points to guilty wood, tells you what to expect, and advises you how to avoid problems.

Robert Woodcock

Robert W. Woodcock, a poison information specialist at Philadelphia's Delaware Valley Regional Poison Control Center, handles dozens of emergencies daily. Enough have stemmed from wood that he decided to do some research. Robert, a hobby woodworker who builds musical instruments, then contacted us to share his discoveries.

"The average woodworker will never see some of the most toxic species," Robert advises. "But, those who work exotic woods, or collect their own, always run the risk." Here, then, unfolds the history of toxic wood that Robert uncovered, with some lessons in prevention.

TOXIC WOOD THROUGH THE AGES

For centuries, it's been fairly common knowledge that some woods, and things made from them, could hinder your health. As far back as 60 A.D., for instance, the Roman historian and naturalist Pliny the Elder described a case where four soldiers actually died after drinking wine from hip flasks made of yew.

Of lesser gravity was the experience of a few German sawyers in the early 1700s. It seems they developed chronic irritation of the nose and eyes, as well as headaches, from sawing bald cypress.

Historic reports such as these—combined with current medical knowledge concerning allergies and irritants—add up to incriminating evidence for several species.

WHAT ARE YOUR CHANCES OF A REACTION TO WOOD?

Statistics say that only two to five percent of all people develop an allergic sensitivity to one or more compounds found in wood. But, if you handle a lot of potentially toxic species, and work with them long enough, you increase your chances of an allergic reaction. And, with sufficient exposure (that varies individually), some woods bother everyone.

What kind of a reaction can you expect? Your body will respond to toxic wood in one or more of the following ways:

- skin and eye irritations;
- respiratory problems;
- nausea, headache, general ill-feeling, liver or kidney malfunction;
- cancer of the nose and sinuses (*nasopharyngeal carcinoma*).

SOMETIMES, WOOD JUST STUFFS YOU UP

Any dust, including wood dust, mildly irritates the sensitive mucous membranes of your nose and eyes, making you sneeze and tear. The dust of some woods,

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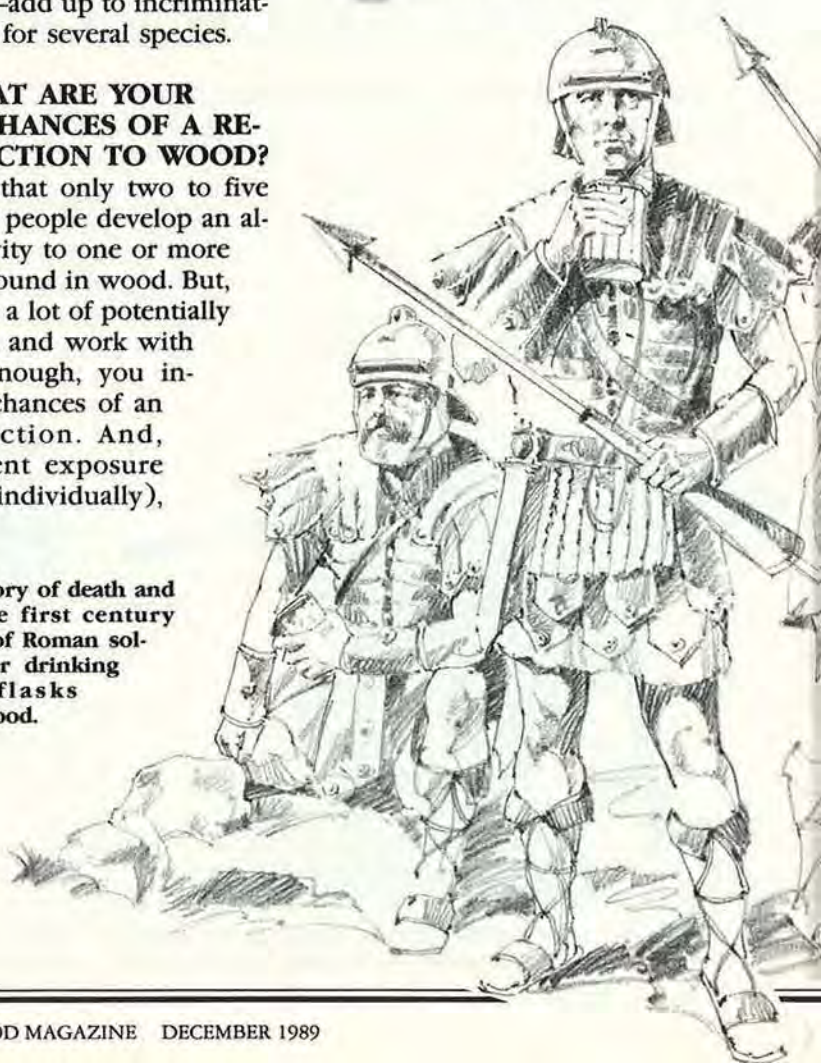


Yew has a history of death and illness. In the first century A.D., a group of Roman soldiers died after drinking wine from flasks made of the wood.

WOOD

From beech to wenge, there's a history of stock to suspect

such as western red cedar and rosewood, can be especially bothersome. Jim Boelling, *WOOD* magazine's project builder, recalls an uncomfortable instance of working rosewood: "The shop was hot, and the rosewood immediately made my nose stuffy and my eyes water—like being exposed to tear gas in Navy boot camp."

However, other woods can make you even more uncomfortable, with a rash that doctors classify as either *irritant dermatitis* or *allergic dermatitis.* Woods called *primary irritants* cause the first type. And, primary irritants provoke reactions in anyone, if you handle them long enough. The rash usually has a uniformly red, swollen area that may erupt in blisters. Typically, it first shows up on the webs of skin between your fingers, where perspiration deposited the toxin from the wood dust and it contacts the skin. Satinwood and snakewood are two woods proven to be primary irritants (for others, see chart).

For you to get an allergic-type rash, you first must be allergy-prone to one or more of the chemicals found in certain woods called *sensitizers.* And, it may take repeated contact for your body to develop a great enough allergy for it to react—the so-called "latency period" of as little as five days and up to 6–8 months. Because individuals have different immune systems and content of the sensitizing compound varies in each piece of wood, it's hard to say how much contact will spur a reaction. But, if you eventually do react, the rash will look like poison ivy—red with small, individual, itchy bumps. The rosewoods, particularly, can produce allergic reactions.

STOCK THAT TAKES YOUR BREATH AWAY

Following an earthquake in 1923, the Japanese rebuilt the small village of Beisugi with western red cedar. Not long after, nearly 40 percent of the villagers developed severe respiratory symptoms while in their homes—symptoms that cleared up when villagers went outdoors. Allergists now call the affliction "Beisugi asthma."

As with species that irritate the skin, wood that can cause respiratory problems falls into the two categories of primary irritants and sensitizers. With respiratory problems, though, primary irritants pose less of a threat. That's mainly due to your body's efficiency in preventing wood dust from entering the lungs in significant quantities, or eliminating it by coughing once it does enter. In fact, medical research has yet to pinpoint any species as a primary irritant causing respiratory reactions.

Although you may escape primary irritants, you have a far better chance of developing an allergic reaction to one or more of the many woods that act as respiratory sensitizers. These include western red cedar of Beisugi fame, redwood, rosewood, mahogany, ebony, myrtle, birch, and others.

If even a small amount of dust from one of these sensitizers enters the lungs of an allergic individual, the air passage becomes irritated and swells, a condition frequently indistinguishable from asthma. The symptoms also can include anything from a mild cough and heaviness in the chest that resembles a minor cold, to severe wheezing and the inability to breathe. Symptoms of this condition go away when you're not exposed to the wood, but return when you come back to the shop to work.

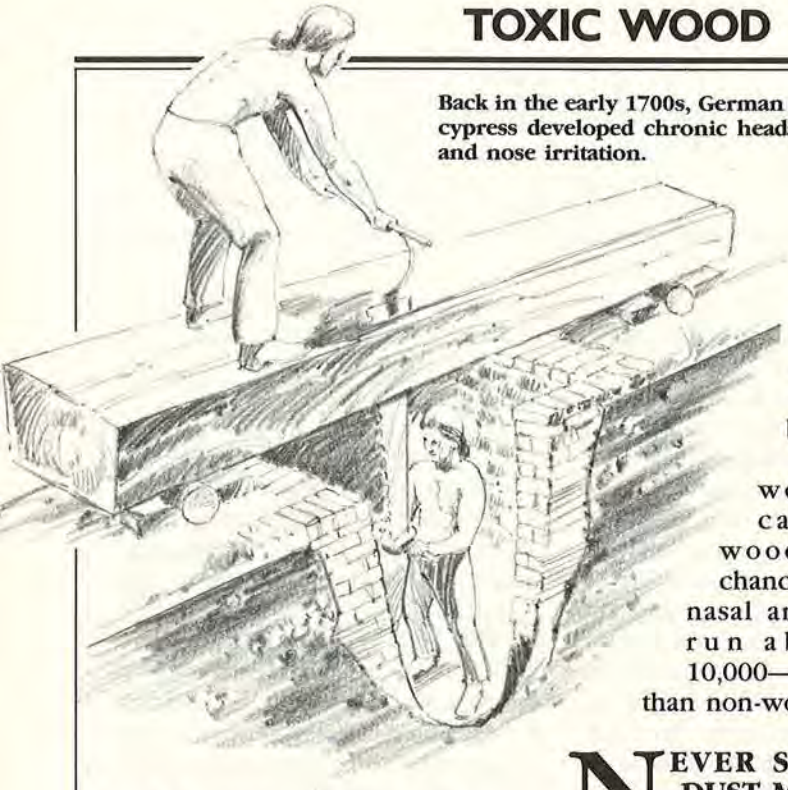
Molds frequently trigger reactions, too. One that actually grows *in* wood happens to be extremely potent: *cryptostroma corticale.* This mold lives happily between the bark and sapwood of many hardwood trees, especially favoring maple and birch. It's responsible for the marbleized spalting that woodturners prize, and for "maple bark stripper's disease," a condition with all the symptoms of severe respiratory allergy. Among hobby woodworkers, at least one death has been reported, that of a New Orleans' man in 1987.

There are two more molds that sometimes causes serious allergic reactions. *Aspergillus nigricant* and *alternaria*, though, prefer moist, dark places, such as a sawdust pile in a basement corner.

PASS THE PEPTO, PLEASE, THE SPECIES DIDN'T AGREE

Many woods, among them birch, black locust, and padauk, contain compounds that, when ingested in sufficient quantities (including inhalation), prove capable of producing any one of several *systemic* reactions: nausea, vomiting,

Continued



Back in the early 1700s, German sawyers cutting bald cypress developed chronic headaches as well as eye and nose irritation.

headache, kidney failure, hallucinations, or cardiac problems. As a matter of fact, native Americans brewed the bark and sapwood of mimosa, a small tree in the black locust family, for a tea that induced relaxation and sleep.

Do you have an aspirin allergy? Then, be wary of willow and birch. Very sensitive individuals might only need casual exposure, such as a whiff of sawdust, to react, since both species possess significant concentrations of *salicylic acid*, the predecessor of aspirin. And from history, we know that two species, yew and oleander, contain enough of the toxins called *cardiac glycosides*, similar to the heart drug digitalis, to be extremely dangerous even in tiny amounts. Luckily for woodworkers, the greatest concentration of the toxins is in the leaves, berries, and bark. That leads us to wood dust, and cancer. Among woodworkers, the chances of developing nasal and sinus cancer run about five to 10,000—40 times greater than non-woodworkers.

Nearly half the residents of Beisugi, Japan had asthmatic reactions to the western red cedar used to rebuild their homes following an earthquake. Outside in fresh air, symptoms subsided.

NEVER SAY NO TO A DUST MASK

Although researchers haven't identified the cancer-causing compound—primarily because the disease has a latency period of from 30–50 years—some evidence points to dust from wood with high tannin content. Such species include chestnut, oak, redwood, western red cedar, and hemlock.

If you have worked wood for more than 25 years, *any* recurrent nasal discharge, bleeding, or sinus infection could signal this condition. Report it to a physician.

Editor's note: *Frankly, I was never too concerned regarding toxic wood. Heck, I've made it through four decades without even catching poison ivy! But, about two weeks before I sat down to write this footnote, my arms carried an ugly rash. As far as my physician and I could determine, it came from cocobolo. One day I was preparing some cocobolo boards for "Wood Profile" photos. Later, the rash showed up. Nothing else in my routine had been out of the ordinary—except for the cocobolo. I guess I'm extremely sensitive. The rash gradually disappeared, along with any longing I might have had to one day work that beautiful wood.*

—Peter J. Stephano, Features editor

TIPS TO TACKLE TOXICITY

Despite the evidence, most woodworkers have never experienced serious reactions to wood. So, don't let possible toxicity scare you. Instead, know the properties of the woods you want to work. Refer to the chart, *right*, to find potential troublemakers.

"If you take to the woods to harvest your stock," says poison expert Robert Woodcock, "keep the following points in mind to avoid or limit your exposure."

- ***Harvest only in fall or winter.*** Trees cut when the sap is up have higher toxicity.
- ***Claim the heartwood.*** With most toxic species, the leaves and stems contain the most toxin, followed by the bark, the sapwood, then the heartwood.
- ***Season toxic wood.*** Wood worked green causes more skin reactions because the sawdust clings.

Woodcock also insists on adequate shop ventilation. "It keeps the work space cool and your perspiration down, decreasing the dust's contact time with your skin." In addition, a well-ventilated shop discourages the growth of mold spores. And, consider installing a dust collection system. Even then, you should always wear a tight-fitting, government-approved (NIOSH) dust mask if you plan to raise large amounts of wood dust.

"Don't neglect cleanliness," Woodcock continues. "It's a good idea to frequently wash, or even shower, when working a possibly toxic wood. Creases and skin pores, as well as dirty hair, trap fine dust particles, inviting reaction. For extra protection, apply a barrier cream, such as DuPont's Protek."

Finally, he urges, "Whenever you develop a *persistent* set of symptoms, especially when you can connect them with exposure to a wood [remember, symptoms may be delayed 12 hours], contact a physician, allergist, dermatologist,

or specialist in industrial medicine. And, be sure to mention that you're a woodworker.

"Of course, potentially toxic woods should never be used for functional bowls, goblets, trays or any other object likely to hold food," notes the specialist. "Even using the wood for jewelry has caused problems."

For answers to problems regarding toxic wood reactions, call one of the regional poison control centers (PCC) below (space prevents a complete national listing).

New York City PCC
212/340-4494

Delaware Valley Regional PCC
Philadelphia, Pa.
215/386-2100

Georgia PCC
Atlanta, Ga.
404/589-4400

Regional Poison Control System
Cincinnati, Ohio
513/558-5111

Mid-Plains Poison Center
Omaha, Neb.
402/390-5400

Texas State Poison Center
Galveston, Texas
409/765-9728

Arizona Poison Control System
Tucson, Ariz.
602/626-6016

Rocky Mtn. Poison & Drug Ctr.
Denver, Colo.
303/629-1123

UCDMC Davis Regional PCC
Sacramento, Calif.
916/453-3692

Oregon Poison Center
Portland, Ore.
503/279-8968

WOOD WITH A RECORD

WOOD SPECIES	TOXIC CLASS		REACTION				POTENCY			SOURCE			INCIDENCE		
	Irritant	Sensitizer	Respiratory	Eye & Skin	Nausea, Etc.	Nasal Cancer	Little	Great	Extreme	Leaves, Bark	Dust	Wood	Unknown	Rare	Common
Bald cypress		X	X				X				X			X	
Balsam fir		X		X			X				X			X	
Beech		X		X				X		X				X	
Birch		X	X		X			X			X	X		X	
Black locust	X				X			X		X				X	
Blackwood		X		X				X			X	X			X
Boxwood		X	X				X				X	X		X	
Cashew		X		X				X			X	X		X	
Cocobolo	X		X	X				X			X	X			X
Dahoma		X	X					X			X				X
Ebony	X		X	X				X			X	X			X
Elm		X		X			X				X			X	
Goncalo alves		X		X			X				X	X		X	
Greenheart		X	X	X					X		X	X			X
Hemlock						X		X		X	X			X	
Iroko	X		X	X					X		X	X			X
Mahogany		X	X	X			X				X			X	
Mansonia	X		X	X					X		X	X			X
Maple		X	X					X			X	X		X	
Mimosa	X				X				X	X	X	X			X
Myrtle		X	X					X		X	X	X			X
Oak, red						X		X			X			X	
Obeche		X	X	X				X			X				X
Oleander	X				X				X	X	X	X		X	
Olivewood		X	X	X				X			X	X			X
Opepe		X	X				X				X			X	
Padauk	X		X	X	X				X		X	X			X
Pau ferro		X		X			X				X	X		X	
Peroba rosa		X	X					X			X	X			X
Purpleheart		X		X	X		X				X	X		X	
Quebracho						X		X			X			X	
Redwood		X	X			X	X				X			X	
Rosewood(s)		X	X	X					X		X	X			X
Satinwood	X		X	X					X		X	X			X
Sassafras		X	X		X	X	X			X	X	X		X	
Sequoia	X		X				X				X	X		X	
Snakewood	X		X					X			X	X		X	
Spruce		X	X				X				X	X		X	
Walnut		X		X			X				X			X	
Wenge		X	X	X				X			X	X			X
Willow		X			X			X		X	X		X		
W. Red Cedar		X	X			X		X			X	X			X
Teak		X		X				X			X				X
Yew, European	X			X				X			X	X			X
Zebrawood		X		X				X			X	X		X	

By Peter J. Stephano with Robert W. Woodcock, RN, BSN, CEN. Illustrations: Jim Stevenson Photograph: Bob Laramie

Print this article

The fearless woodworker goes shopping

BANDSAW

If you're like me—amazed by the array of tools and accessories on today's market, or new at buying things for your shop—you've turned to the right page. Effective with this issue, I'll provide you with the information you and I need to go shopping with the confidence of a pro for this or that woodworking tool, material, or accessory. Take for example, bandsaw blades—maybe you've heard the terms skip-tooth, hook-tooth, three-tooth, 16-tooth—what's it all about anyway? Stay tuned as we get to the bottom of this matter.

Bill Krier
Product/Techniques Editor

YOUR TWO OPTIONS IN BLADE MATERIALS

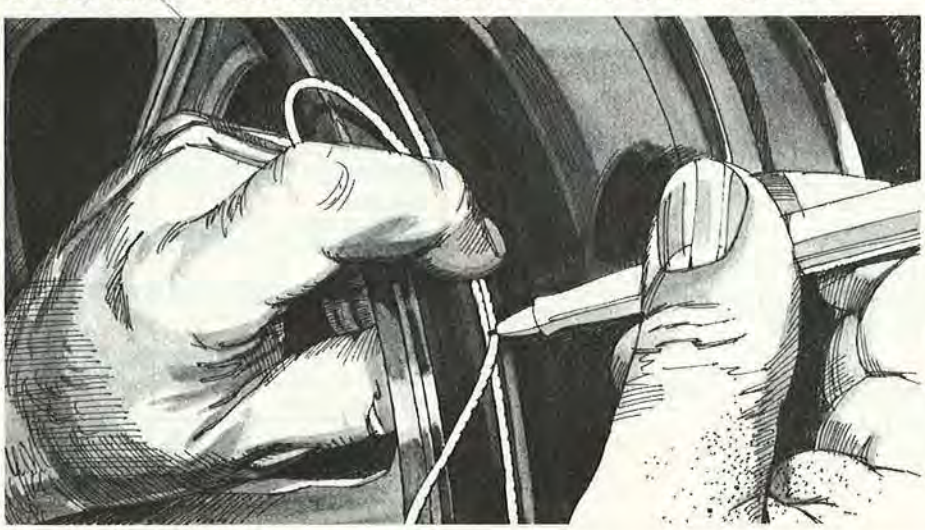
Like carbide-tipped circular saw blades, bi-metal bandsaw blades (those with carbon-steel teeth backed by a spring-type steel) offer you longer life than carbon-steel blades, but at a higher price. Bob Candiano of American Saw & Mfg. Co. told me, "Bi-metal blades cost two to three times as much as carbon-steel blades, but you'll get twice your money back in smoothness of cut and blade life." On the other hand, Chuck Olson of the Olson Saw Co. says, "I can buy three carbon steel blades for the price of one bi-metal blade, so I can keep a greater selection of carbon-steel blades on hand."

Who's right? Since I'm the kind of woodworker who's constantly changing blades and rarely giving one of them a great amount of wear, I'm going to stick with carbon-steel blades. On the other hand, if you stay with one blade for nearly all your work, then buy that blade in bi-metal. Here are a few other things I found out that also will affect which type you buy:

- Because bi-metal blades flex less, you should use them only if you own a two-wheel bandsaw with 14"-diameter or larger wheels. Otherwise, over-flexing will cause tiny cracks in the blade that can lead to poor performance and breakage.
- If you prefer the lower price of carbon-steel blades, make sure you buy the flex-back type for a two-wheel bandsaw with 12" diameter and smaller wheels. Otherwise, buy a hard-back carbon-steel blade.
- If you own a three-wheel bandsaw, you should buy only flexible-back carbon-steel blades. The reason: The tighter radius of their wheels can promote fatigue cracks in stiffer blades.

MEASURE UP THE BLADE BEFORE PLUNKING DOWN YOUR MONEY

As I quickly learned, you can't order a bandsaw blade until you know the correct blade length. My local distributor passed along this simple method: First, grab some string and a felt-tipped pen. Then, wind the string around the wheels, following the blade path. Mark the string at an overlap point as shown at *right*, remove the string from the bandsaw, and measure the distance between the two marked points (record this figure inside the bandsaw cabinet). While you have the saw opened, make note of the wheel diameter (this information will come in handy later).

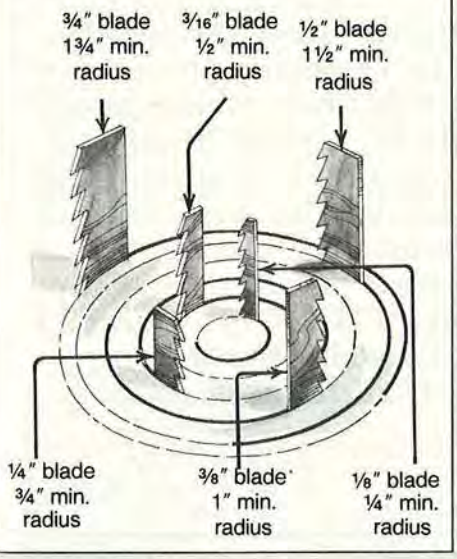


for...

BLADES

BUY A WIDTH THAT FITS THE JOB

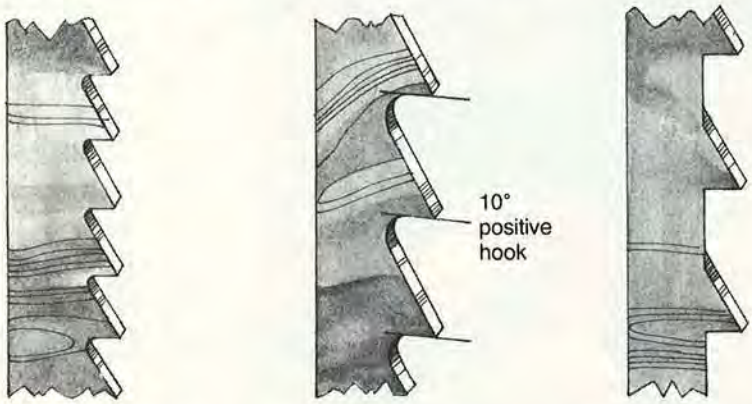
You'll find bandsaw blades from ⅛ to ¾" wide. As shown *below*, narrower blades turn a tighter radius than wider blades. "For accuracy, smoothness, and blade life, use the widest blade possible," says Barry Langlieb of Chandler Bandsaw.



WHAT TO KNOW ABOUT TOOTH PATTERNS

As shown *below*, the standard-tooth pattern has a less aggressive cutting angle than the hook-tooth pattern. You'll find the standard pattern in 6- to 16-tooth (per inch) blades intended for thin materials. The hook pattern, found in 2- to 6-tooth blades, cuts faster, especially in thicker materials.

Skip-tooth pattern blades (every other tooth missing) have 3 to 6 teeth per inch. These blades claim the same advantages as the hook-tooth variety, and have gained a reputation as good resawing blades. Nevertheless, Candiano doesn't see any use for them, even though his company manufactures this pattern. "There's no advantage to a skip-tooth blade. You get a smoother, more aggressive cut with a hook-tooth blade.



STANDARD TOOTH **HOOK TOOTH** **SKIP-TOOTH**

REMEMBER TO SINK THE RIGHT NUMBER OF TEETH INTO YOUR WORK

For woodworking purposes, bandsaw blades generally range from three to 16 teeth per inch. "You don't want less than three teeth, or more than 18 teeth, in the material at one time," Candiano told me.

For example, use a 3-tooth blade when cutting 2"-thick material, an 8-toother for ¾" stock, and a 16-tooth blade for ¼" material. All of these examples leave four to six teeth in the material at one time. Sure signs your blade has too many teeth for the material: blade binding and a wavy cut because the gullets (the spaces between the teeth) load up with sawdust.

A lot of woodworkers just don't like changing blades for different tasks. If that describes you, buy a ¼"-wide, 6- to 10-tooth blade. Just feed the stock slowly when cutting materials more than 2" thick. Also, increase the blade tension by one blade size for thick stock (set the tension at ⅜" for a ¼" blade).

HANDY SOURCES FOR MORE INFORMATION

American Saw & Mfg. Co., Technical Services Department, P.O. Box 504, East Longmeadow, MA 01028. Call 413/525-3961.

Chandler Bandsaw, Inc., 3498 N. San Marcos Place, No. 3, Chandler, AZ 85224. Call 800-843-2523. In Ariz. call 602/892-0120.

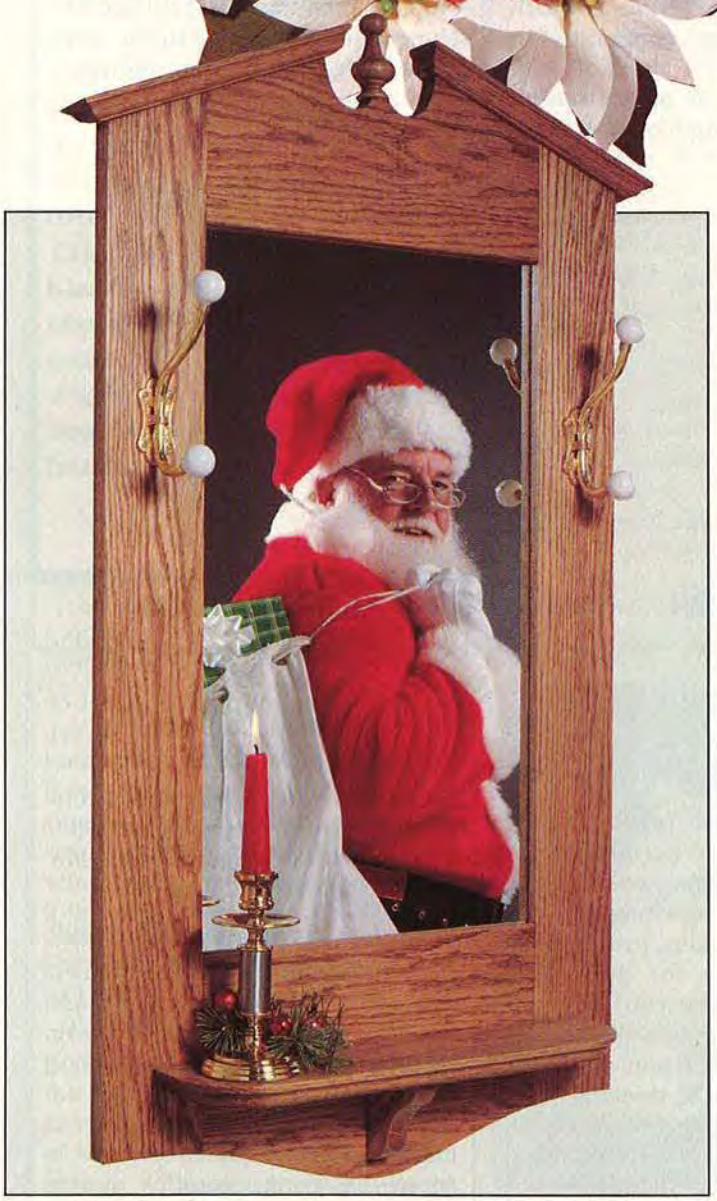
Olson Saw Co., Bethel, CN 06801. Call 203/792-8622.

Illustrations: Jim Stevenson
Photographs: Jim Kascoutas

H * O * GIFT

In this year's holiday gift section, special loved ones. In addition to the child, bookworm, art collector,

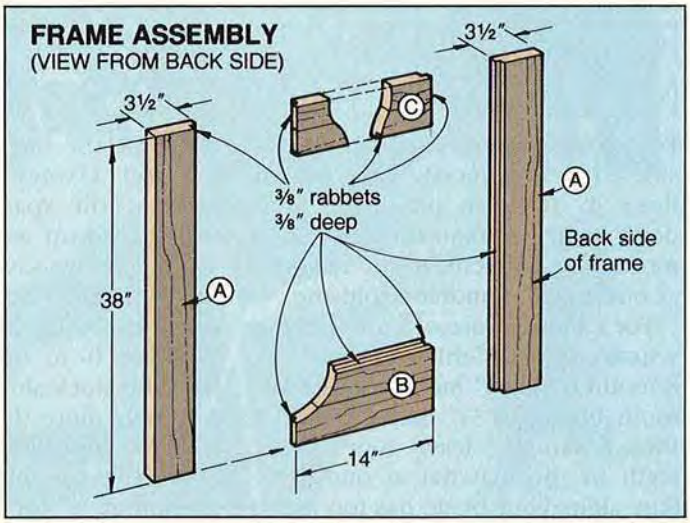
CHIP OFF AN OLD WALL



In the 18th century, only the wealthy could afford to import mirrors (or looking glasses as they were called) from England. To accent these mirrors' beauty, colonial craftsmen built frames similar to the one shown here. The frame I've designed for you is a simplified version of a Chippendale-period (1750-1779) frame. I like the way this wall mirror complements today's traditional decors.

Print this article

A. R. Downing
Design Editor



L * I * D * A * Y

SAMPLER

we offer you six attractive woodworking projects for those
he oak wall mirror shown here, we've included gift suggestions for
ook, and tree trimmer on your gift list.

CHIPPENDALE MIRROR

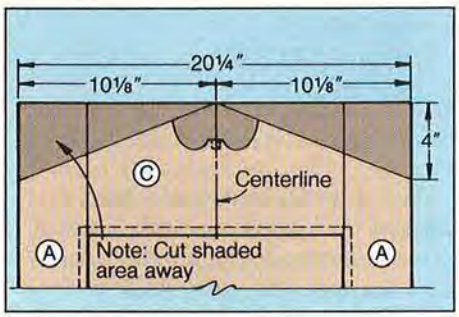
FORMING THE FRAME

1 Cut the mirror frame stiles (A), bottom rail (B), and top rail (C) to the sizes listed *below.* (We edge-joined narrower stock to make the wide top and bottom rails.)

2 Cut or rout a ⅜" rabbet ⅜" deep along the back inside edge of all four frame members. Now, machine the same-sized rabbets along both ends of the top and bottom rails where shown. (We test-cut scrap stock first to ensure the surfaces would be flush when the rabbeted pieces were held together.)

3 Glue and clamp the frame members together, checking for square.

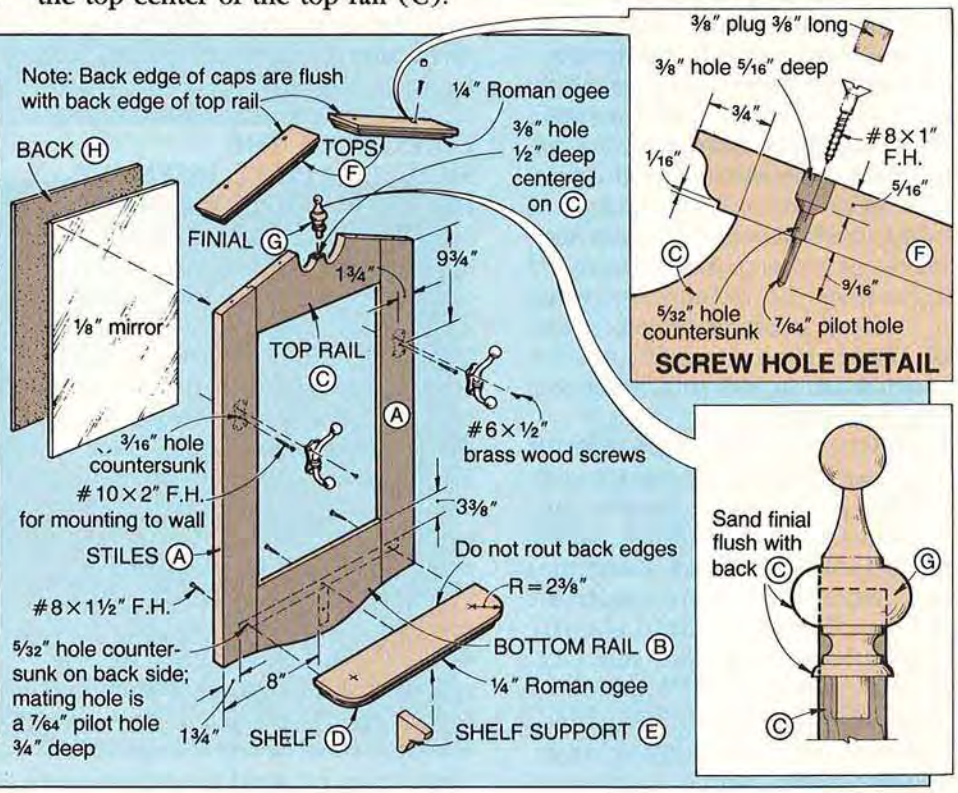
4 Using the drawing at *right* for reference, lay out the angled top edges. Use the full-sized half pattern on the following page to mark the top center of the top rail (C).

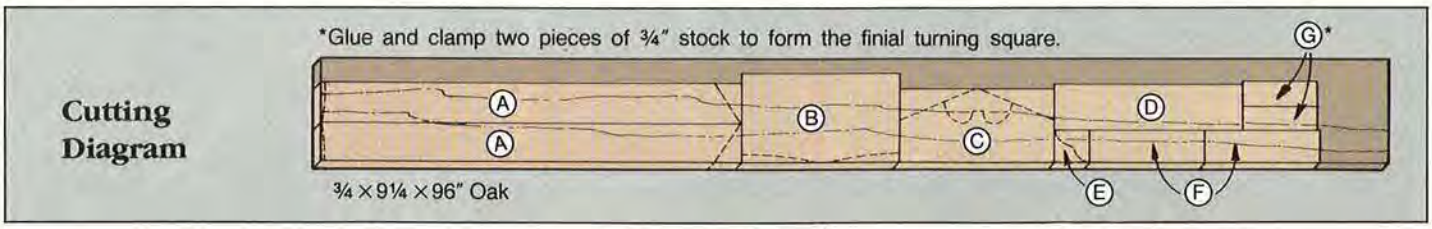


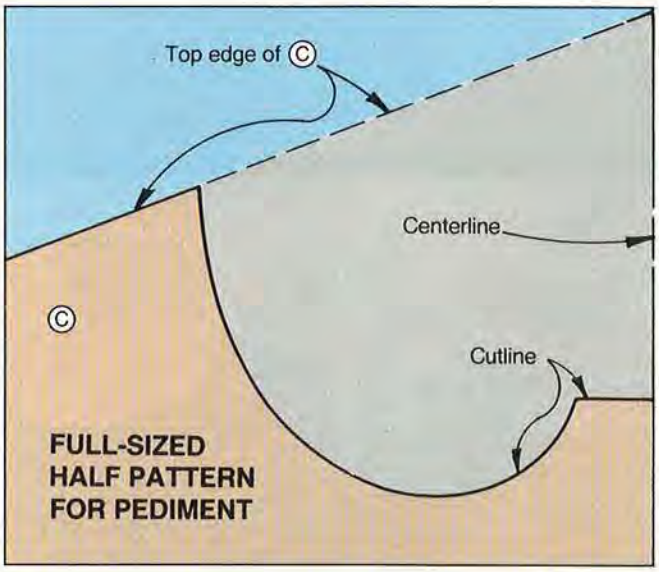
Bill of Materials

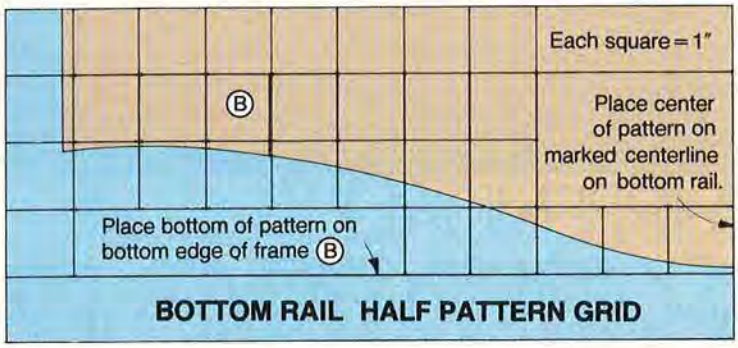
Part		Finished Size T	W	L	Matl.	Qty.
A	stiles	¾"	3½"	38"	O	2
B	bottom rail	¾"	8"	14"	O	1
C	top rail	¾"	6¾"	14"	O	1
D	shelf	¾"	4"	16¾"	O	1
E	support	¾"	3"	3⅛"	O	1
F	pediment tops	¾"	1½"	10¼"	O	2
G	finial	1½"	1½"	3½"	LO	1
H	back	⅛"	13⅞"	23⅞"	P	1

Material key: O-oak, LO-laminated oak, P-plywood
Supplies: four #8×1½" flathead wood screws, four #8×1" flathead wood screws, two #10×2" flathead wood screws, ⅛" mirror, hotmelt adhesive, stain, finish.








Each square = 1"
B
Place center of pattern on marked centerline on bottom rail.
Place bottom of pattern on bottom edge of frame B
BOTTOM RAIL HALF PATTERN GRID

5 Mark a centerline across the bottom rail (B). You'll use this line in the next step to locate the template.

6 To enlarge the grid pattern for the bottom rail, cut a piece of heavy paper to 3×11", and draw a 1" grid on the paper. Using the Bottom Rail Half Pattern Grid for reference, lay out the bottom-rail outline on the marked grid. To do this, mark the points where the pattern outline crosses each grid line. Finally, draw lines to connect the points. Cut the paper pattern to shape, align the inside edge with the marked centerline, and mark the shape of the frame bottom (you'll have to do this twice to mark both ends).

7 Bandsaw the frame top (pediment) and bottom to shape, and sand the cut edges to remove the saw marks. (We used a finish sander to remove the marks along the flat surfaces, and a drum sander to sand the curves.)

8 Drill a 3/16" hole in each stile (A) where located on the Exploded-View Drawing. You'll use these holes later when attaching the mirror frame to the wall.

9 Center a coat hook over each mounting hole just drilled in the previous step. (See the Buying Guide for our source of hooks.) The coat hooks hide the mounting screws after the mirror has been hung. Using the holes in the coat hook as guides, drill four pilot holes in each stile. Do not attach the coat hooks; you'll fasten them after hanging the completed frame on the wall.

CONSTRUCT THE SHELF/SUPPORT ASSEMBLY

1 Cut the shelf (D) to 4×16¾" from ¾" stock. Mark a 2⅜" radius on the front corners, and cut the corners to shape. Sand the corners.

2 Rout a ¼" Roman ogee along the front and sides of the shelf. See the Screw Hole Detail on the previous page for ogee-shape reference.

3 Cut a piece of ¾"-thick stock to 3×3⅛" for the shelf support (E). Transfer the full-sized shelf support pattern to the blank with carbon paper or by adhering a photocopy. Bandsaw the support to shape. Sand the support smooth.

4 Mark the centerpoints for the support and shelf holes on the front face of the mirror frame. For hole centerpoints, see the Exploded-View Drawing. Drill the holes.

5 Tape the shelf, centered over the holes just drilled, to the front of the mirror frame. Working from the back of the frame, and using the holes as guides, drill pilot holes into the back of the shelf. Screw the shelf in place. Now, center the shelf support under the shelf, and drill a pilot hole into it. Remove the shelf from the mirror frame.

THE PEDIMENT TOPS AND FINIAL COME NEXT

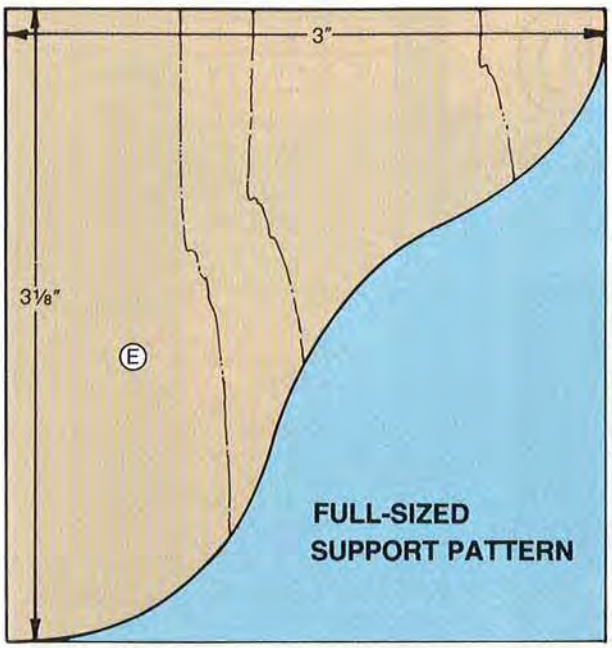
1 Cut the pediment tops (F) to size. Next, rout a ¼" Roman ogee along the bottom face of the front and side edges.

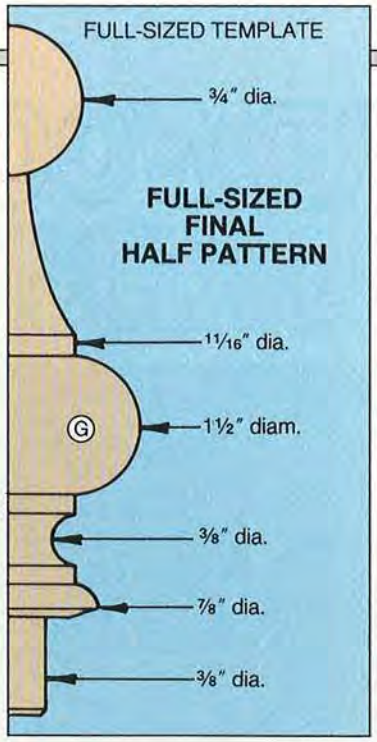
2 Drill and counterbore two mounting holes in each pediment top where shown on the Exploded-View Drawing and to the sizes shown on the Screw Hole Detail.

3 With a portable hand drill, carefully drill a ⅜" hole ½" deep centered in the top of the top rail (C) for the finial.

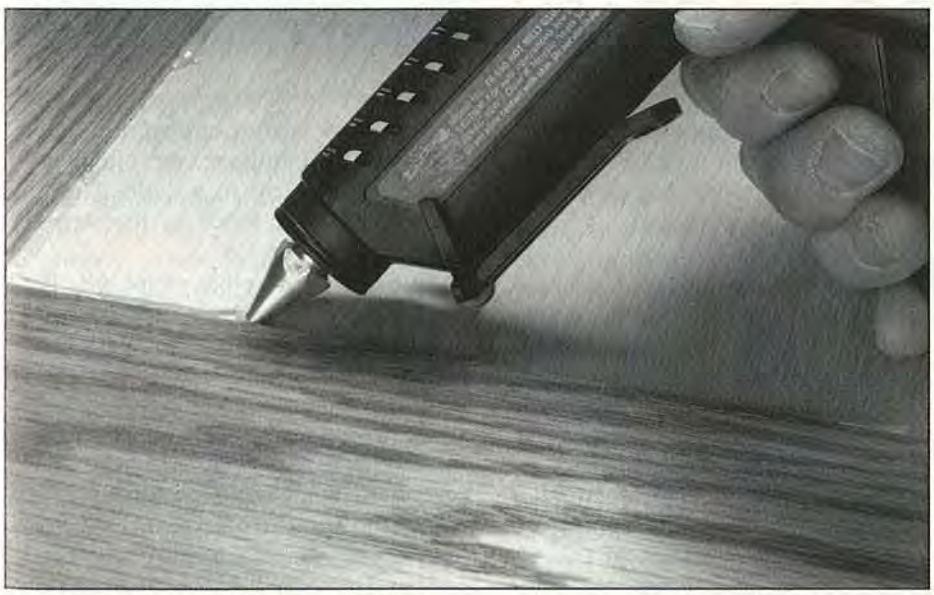
4 Mount a 1½" turning square 8" long between centers on the lathe for the finial (G). If you don't have stock this size, laminate two pieces of ¾"-thick stock.

5 Transfer the full-sized finial template to posterboard. Cut the template to shape. Using the template as a guide, turn the finial to shape as shown in the photo *above right*. (We used a small gouge and skew to shape the oak finial.)





Shape the finial with a skew chisel.



We fastened the plywood back with hotmelt adhesive.

Being careful not to change the shape of the finial, sand it smooth with the lathe running at about 1,250 rpm. Using a parting tool, part it from the lathe. Sand the top ball-shaped portion of the finial smooth.

6 Belt-sand the back of the finial. When mounted in the hole in the top rail, the back of the finial should be flush with the back of the mirror frame.

7 Glue the turned finial in place. Glue and screw the pediment tops in position. Cut plugs and fill the counterbores in the top surface of the pediment tops. Sand the plugs flush. Finish-sand all the parts.

8 Glue and screw the shelf and shelf support in place. Immediately wipe off any excess glue with a damp rag.

ADD THE FINISH, MIRROR, BACK, AND THEN HANG

1 Stain the assembly, and apply at least two coats of clear finish.

2 Take the oak frame to a glass shop and have a mirror cut to the size of the opening *less ⅛" in length and width* to allow for contraction of the frame. Our rabbeted opening measures 14×24", we cut our mirror and hardboard back to 13⅞×23⅞".

3 Cut the back (H) to size from plywood or hardboard, and secure it in place with hotmelt adhesive as shown in the photo *below left*. The hotmelt holds the back and mirror firmly in place, yet allows the frame to expand and contract.

4 Hang the frame on the wall. Attach the coat hooks to the frame.

BUYING GUIDE

- **Coat hooks.** Two brass and porcelain coat hooks, catalog no. 64000. $9.50 ppd. (12.50 Canadian). Armor Products, Box 445, East Northport, NY 11731, or call 516/462-6228 to order.

Produced by Marlen Kemmet
Project Design: James R. Downing
Photographs: Hopkins Associates, Jim Kascoutas
Illustrations: Kim Downing; Bill Zaun

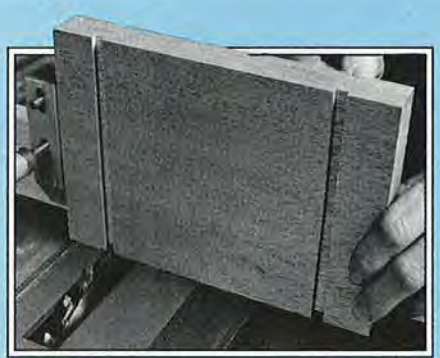
Print this article

HARDWOOD BOOKENDS

A GREAT WAY TO SUPPORT YOUR LOCAL LIBRARY

Bill of Materials					
Part	Finished Size*			Material	Qty.
	T	W	L		
A	¾"	4½"	6½"	mahogany	2
B	1 1/16"	5"	7¼"	mahogany	2
C	½"	5⅜"	7½"	mahogany	2
D	1 1/16"	6"	8½"	mahogany	2
E*	¼"	¼"	¾"	cardinal wood	4
F*	¼"	¼"	1 1/16"	cardinal wood	8
G*	¼"	¼"	½"	cardinal wood	4
H*	¼"	¼"	4¼"	cardinal wood	8
I*	¼"	¼"	4¾"	cardinal wood	8
J*	¼"	¼"	5¼"	cardinal wood	8
K*	¼"	¼"	5¾"	cardinal wood	8
L	¾"	7"	6"	walnut	2

*Initially cut * parts oversized. Trim them to finished size according to the instructions.
Supplies: six #8×1½" flathead wood screws, silicone sealant, four ¼" washers, clear polyurethane finish.



Cut ¼" dadoes in each book blank to house the blind lines.

CUT THE BOOKS TO SIZE AND FORM THE DADOES

1 Rip and crosscut the eight books (A, B, C, D) to the sizes listed in the Bill of Materials. (We used different thicknesses of mahogany to make the books; see the Buying Guide for our source.)

2 Raise a ¼" dado blade ¼" above the saw-table surface. Attach an auxiliary wood fence to your miter gauge. Set a stop 1" from the inside edge of the dado blade, and cut dadoes on both surfaces and one edge of the A books. Repeat on the opposite end of book A as shown in the photo *above right*.

3 Using the dimensions on the Exploded-View Drawing, reset the stop and cut ¼" dadoes ¼" deep in books B and D. Lower the blade, reset the stop, and cut ¼" dadoes ⅛" deep in the ½"-thick books C.

CUT AND INSTALL THE BLIND LINES

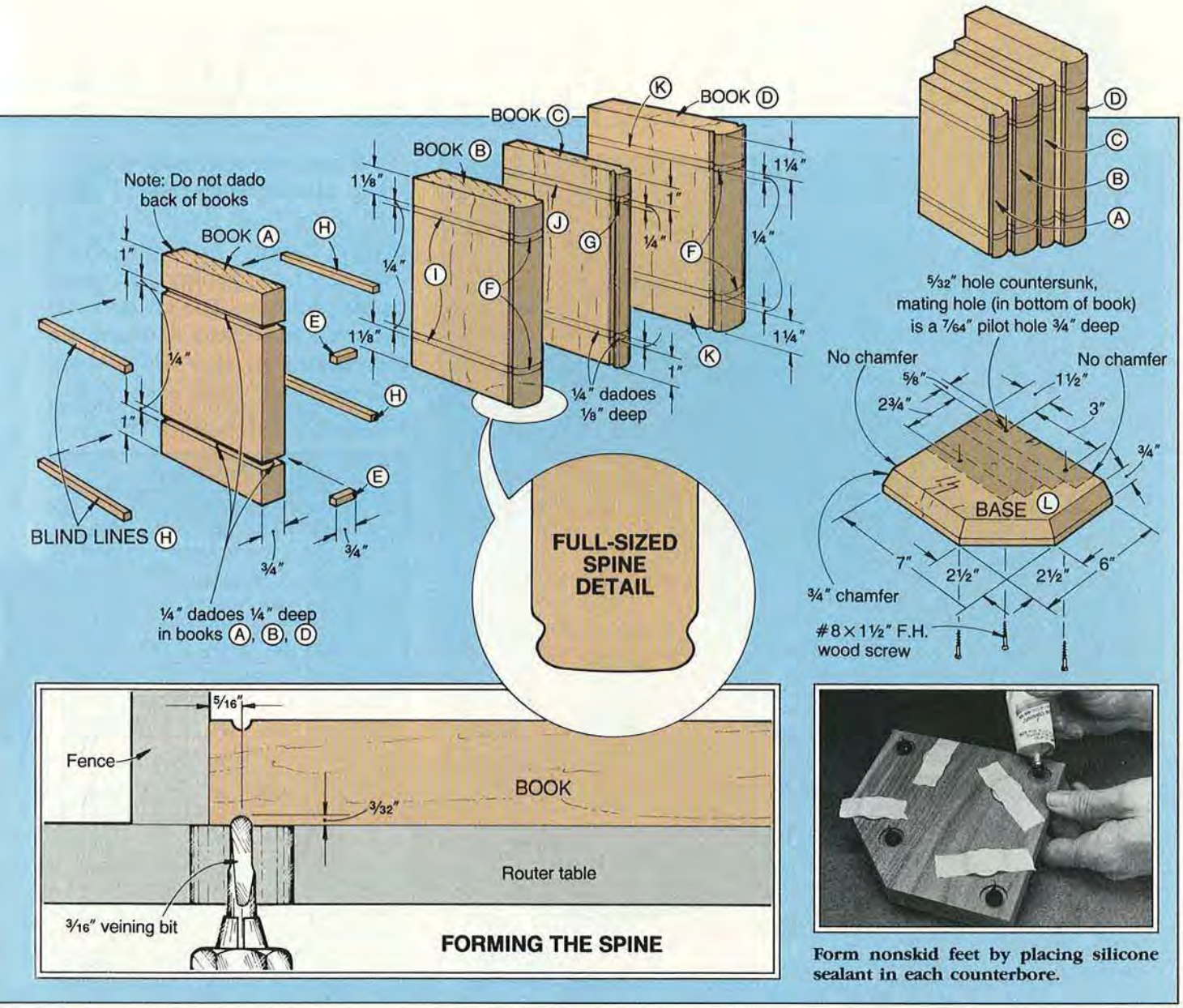
1 Cut a piece of ¼" padauk or cardinal wood to 4×32" for the blind lines (E thru K). (We cut a piece of ¾" stock to 4×32" and then resawed it in half on the tablesaw. Next, we planed and sanded one section until its thickness equaled the width of the dadoes in the books.) The extra width of the 4"-wide piece makes it easier and safer when ripping the thin strips to width in the next step.

2 Rip seven ¼"-wide strips from the ¼" stock. (After cutting the first strip on the bandsaw, we checked the fit of the strip in a dado. Then, we adjusted the fence so the strips protruded about 1/32".)

3 Cut the short edge strips (E, F, G) to length plus 1/16". (We used a miter box and backsaw; we feel the pieces are too short to safely cut with power tools.)

4 Center and glue the short strips in place in the dadoes. Hold the pieces in place with masking tape.

5 Cut the blind lines (H, I, J, K) to length plus 1/16". Glue and tape the pieces in place. Sand the strips flush. Due to the shallow dadoes, books C require more sanding.



Form nonskid feet by placing silicone sealant in each counterbore.

HERE'S HOW TO SHAPE THE SPINE

1 Follow the drawing *above* to rout the spine edge in each book. Sand the routed edge to the shape shown on the Spine Detail.

2 With the back edges and bottoms flush, glue and clamp together four books for each bookend.

ADD THE BASE AND THEN THE FINISH

1 Cut two pieces of ¾"-thick walnut to 7" wide by 6" long for the bookend bases (L). Mark the angled corner on each base (we used a combination square) as dimensioned on the drawing *above right*. Cut the angled corner.

2 Rout a ¾" chamfer on each walnut base where shown on the drawing *above right*.

3 On the bottom of each base, mark the locations, and then drill three mounting holes. With the back and inside edges flush, clamp the laminated books to the bases. Using the holes in the bases as guides, drill 7/64" pilot holes ¾" deep into the bottom of the books.

4 To make your own nonskid feet, bore four ¾" holes ⅛" deep in the corners of each base. Put a puddle of silicone sealant in each hole as shown in the photo *above* (the silicone should protrude about ⅛" above each hole). Tape four ¼" flat washers to the bottom of each base to act as spacers. To flatten the protruding silicone, set each base on a piece of glass or waxed paper until the silicone hardens. Then, fasten the books to the top of each base. Sand smooth and add the finish.

BUYING GUIDE

● **Hardwood lumber kit.** South American mahogany: ½ × 5⅜ × 16", ¾ × 4½ × 14", 1 1/16 × 5 × 32". ¼ × 4 × 33" cardinal wood. ¾ × 7 × 13" walnut. $27.99 ppd. Steve Wall Lumber Co., Route 1, Box 287, Mayodan, NC 27027. Or, call 800-633-4062 to order.

Project Design: James R. Downing
Photographs: Hopkins Associates
Illustrations: Kim Downing; Bill Zaun

Print this article

ART TAKES A STAND

TABLETOP

We'll bet you never see an easel as attractive as this in any gift shop. Jim Boelling, our project builder, built the original easel to display pictures of his children. For an investment of less than $10 and a few hours in the shop, you can support your own photos, needlework, or artwork.

Bill of Materials

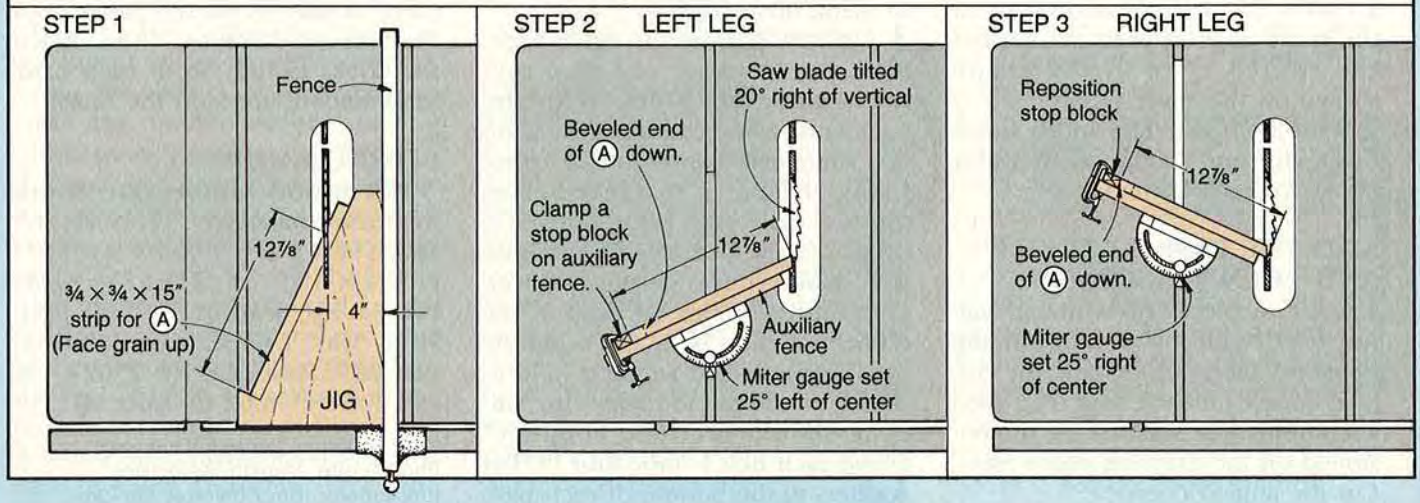
Part	Finished Size* T	W	L	Matl.	Qty.
A* front legs	¾"	¾"	12⅞"	W	2
B* rear leg	¾"	¾"	10¼"	W	1
C* spreader	¾"	¾"	3⅝"	W	1
D* hinge	⅛"	1½"	2⅜"	W	1
E center-posts	⅜"	½"	14"	W	2
F spacers	⅛"	⅜"	½"	W	2
G* canvas holder	¾"	¾"	3¼"	W	1
H* canvas rest	¾"	¾"	6"	W	1

*Initially cut * parts oversized. Trim them to finished size according to the how-to instructions.

Material key: W-walnut

Supplies: spray adhesive, three #6×¾" roundhead brass wood screws with ⅛" brass flat washers, 3/16" dowel, wet/dry sandpaper, double-faced tape, finish.

CUTTING THE FRONT LEGS



EASEL

CUT THE LEGS AND SPREADER TO SIZE

1 From ¾"-thick walnut, cut two strips ¾" wide by 15" long for the front legs (A), one strip ¾×11" for the rear leg (B), and a fourth strip ¾×8" for the spreader (C). The pieces are cut slightly long for safety in machining.

2 Build a jig from ¾" stock (we used plywood) to the shape shown at *right*. Follow Step 1 on the drawing titled Cutting the Front Legs to angle-cut the *top* end of both legs. Tilt the saw blade, angle the miter gauge, and cut the compound angle on the *bottom* of both *front* legs as shown in Steps 2 and 3.

3 Cut the rear leg (B) to 10¼" long, cutting a 10° bevel across the bottom end. Cut the spreader (C) to length (3⅝"), cutting each end at a 25° angle (see the Dowel Hole Detail *below* for reference).

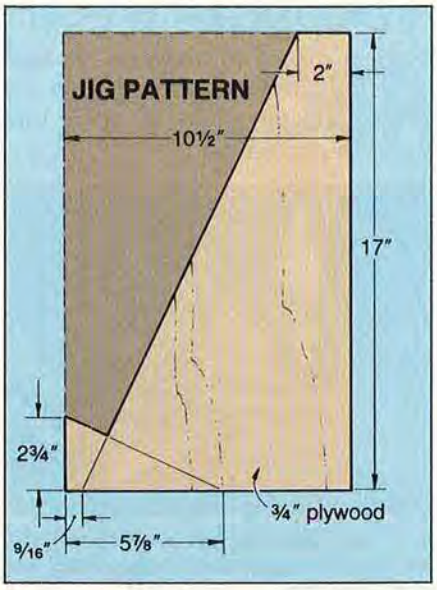
NOW, CUT THE HINGE AND JOIN THE FRONT LEGS

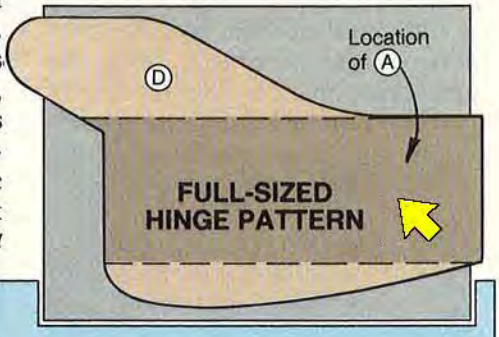
1 Cut a piece of ¾" walnut to 2×12". Then, resaw a ⅛"-thick piece 2" wide from the ¾" stock. (We cut the stock extra-wide and long for safety in resawing.)

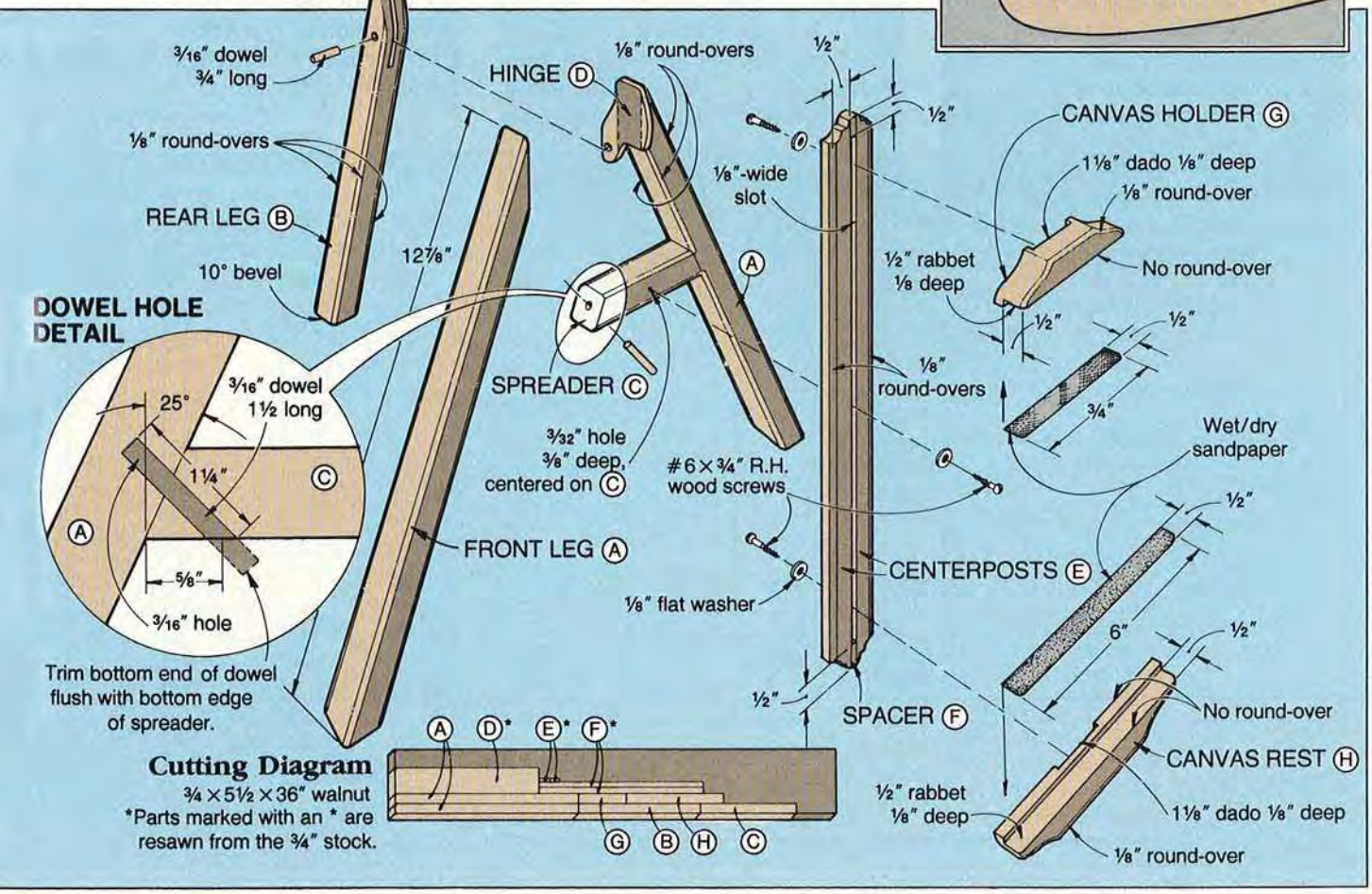
2 Using carbon paper or a photocopy and spray adhesive, transfer the full-sized Hinge Pattern outline at *right* to the ⅛" stock. With a bandsaw or scrollsaw, cut the hinge (D) to shape. Sand smooth.

3 Glue and tape the hinge between the front legs. (As shown in the photo on page 88, we clamped a board in our woodworker's vise. After positioning the bottom ends of the front legs against the board, we placed small handscrew clamps on the board to hold the legs in position as we glued and taped the hinge between the leg tops. The six

Continued







TABLETOP EASEL

washers shown in the photo *below* were used to hold the top end of the legs off the table, allowing the hinge to protrude.)

With the front legs propped up on six flat washers, glue the hinge piece between the legs.

4 Glue and tape the spreader (C) between the front legs. After the glue dries, mark a pair of centerpoints on the bottom of the spreader 5/8" from the joint line where shown on the Dowel Hole Detail on the previous page.

5 To strengthen the joint between the spreader and front legs, secure the front-leg frame in a woodworker's vise. Drill a pair of 3/16" holes through the spreader and into the front legs where shown on the Dowel Hole Detail. (We eyeballed the angles and drilled the holes with a brad-point bit.)

6 Cut two 3/16" dowels 1½" long. Put a dab of glue in each hole, and tap the dowels into position. Trim the excess dowel flush with the bottom edge of the spreader.

7 Find center and drill a 3/32" hole 3/8" deep in the front surface of the spreader (see the Exploded-View Drawing for reference).

THE HINGED REAR LEG PROVIDES STABILITY

1 To cut the hinge kerf in the rear leg, start by marking a line across the rear leg (B) 1" from the top end. Next, raise a 1/8"-wide tablesaw blade 7/8" above the saw table. Position the fence to center the blade on the top end of the rear leg. Start the saw, and push the rear leg into the blade until the blade reaches the marked line where shown in the drawing *below*. Carefully back away the rear leg from the blade, and turn off the saw.

2 Mark the curve on the kerfed end of the rear leg, and cut the top end of the rear leg to shape. Using the drawing *below* for reference, mark the centerpoint and drill a 3/16" hole through the top end of the rear leg.

3 Sand or rout a 1/8" round-over on all edges of the front-leg frame (A, C) and rear leg (B).

THE CENTER POST ASSEMBLY COMES NEXT

1 Cut the center posts (E) and spacers (F) to size from 3/8" stock (we planed a thicker piece to size).

2 Now, with the ends and surfaces flush, glue and clamp the spacers between the center posts where shown on the Exploded-View Drawing.

3 Transfer the decorative pattern *below* to both ends of the center post assembly. Cut the ends to shape (we used a scrollsaw).

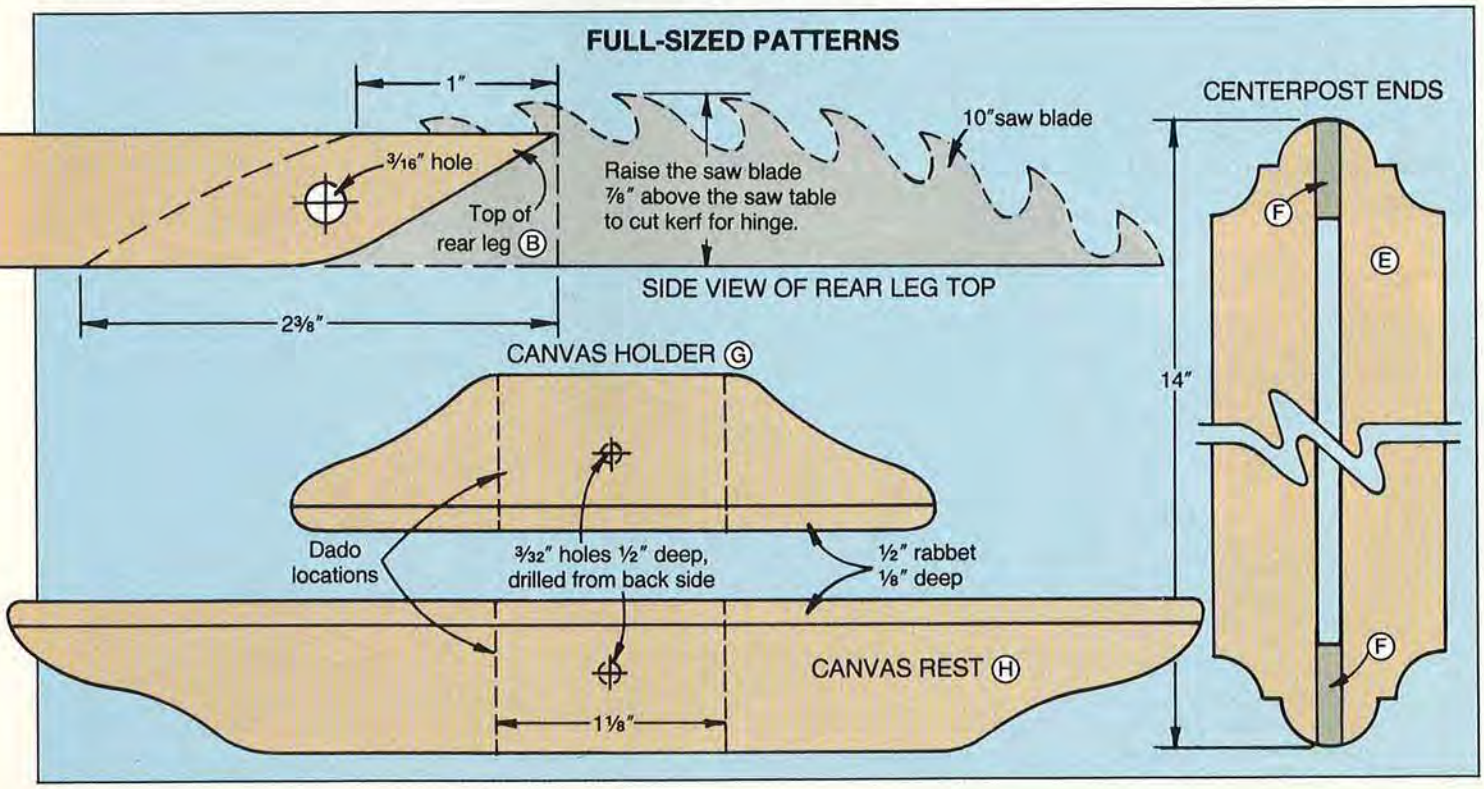
4 Sand or rout 1/8" round-overs along outside edges (not the ends) of the center-post assembly.

ADD THE CANVAS REST AND CANVAS HOLDER

1 Cut a piece of 3/4"-thick walnut to 3/4 × 12" for the canvas holder (G) and the canvas rest (H).

2 Cut or rout a ½" rabbet 1/8" deep the length of the strip.

Continued on page 99



LOOK WHAT'S COOKIN' IN THE SHOP

ROLLING-PIN RECIPE-CARD HOLDER

Print this article

Typically, recipe cards receive plenty of abuse while being used for meal preparation. And over time, spills and splatters take their toll. Keep your recipe cards up and out of harm's way with this novel stocking stuffer.

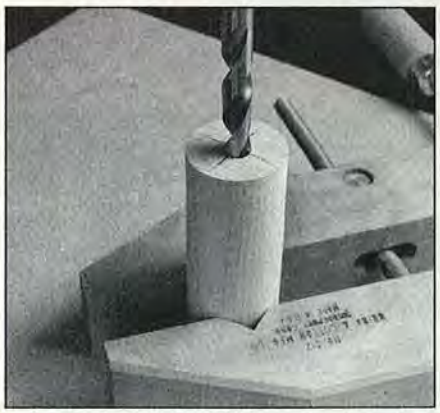
TURN THE BARREL, AND CUT THE KERF

1 Cut a 5½" length from a 2" maple turning square for the barrel (A). If you don't have stock this thick, laminate thinner pieces to size. Draw diagonals on each end to find center. Punch a small indentation at each marked centerpoint, and mount the stock between centers on your lathe. Turn the barrel to a 1¾" diameter, and use a parting tool to square the ends.

2 With the barrel still mounted between centers, sand it smooth.

3 As shown in the photo at *right,* secure the barrel in a handscrew clamp. Center the bit (we used a brad-point) over the indented centerpoint, and drill a ½" hole ½" deep. Repeat on the opposite end.

4 Clamp the barrel in a woodworkers vise, and use a backsaw to cut a 1/16" kerf ¼" deep to hold the recipe card later. Finish-sand the barrel.



Find center and bore a ½" hole ½" deep into both ends of the barrel.

SHAPE THE HANDLES WITH A DRUM SANDER

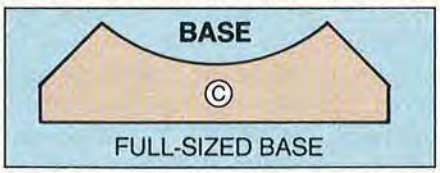
1 Cut two 3⅜"-long pieces from ½"-diameter walnut dowel for the rolling-pin handles (B).

2 Chuck the top 1" of one dowel section into your drill press. Fit your portable drill with a 2" drum sander. With the drill press running at about 750 rpm, sand a concave shape to each handle as shown in the photo *below* and on the full-sized handle pattern. Hand-sand the very end of the handle to shape.

With a portable drill and drill press running, sand the handles to shape.

ADD THE BASES AND FINISH

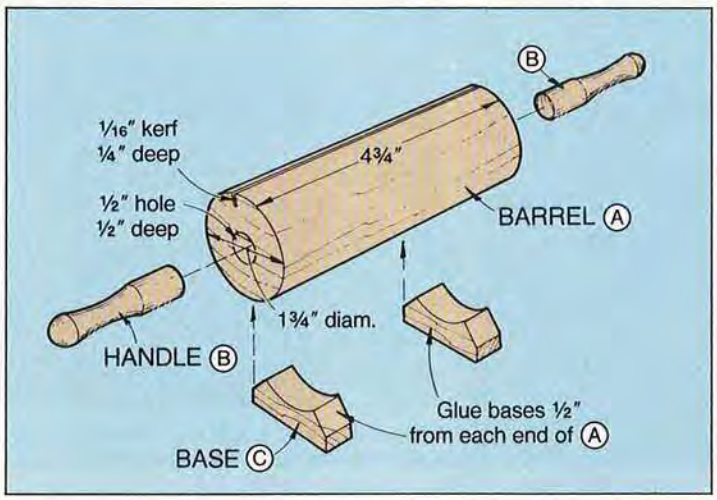
1 Transfer the base pattern shown *below* to ½" walnut stock. Cut two bases (C) to shape. Sand smooth.

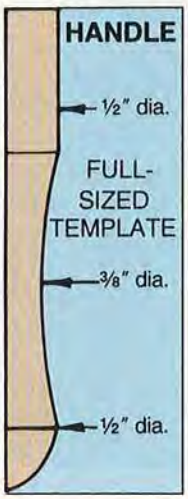


2 Glue a handle in each end of the barrel. Glue and clamp the bases to the barrel where shown in the Exploded-View Drawing.

3 Remove any excess glue and sand smooth. Apply a clear finish (we used lacquer).

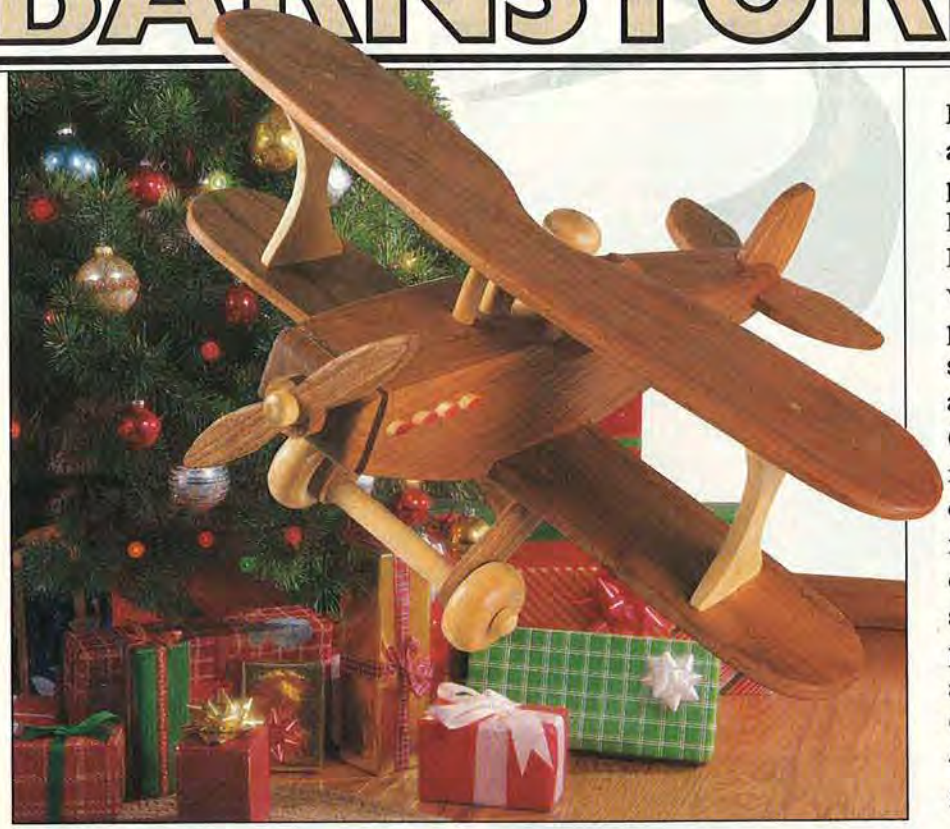
Project Design: James R. Downing.
Photographs: Bill Hopkins
Illustrations: Kim Downing; Bill Zaun





THE CURTISS JN-4 "JENNY"

BARNSTORMING



Here's another award-winning project from our first Design-A-Toy contest. Steve Bruni, an avid Iowa woodworker, modeled his toy plane after the Curtiss JN-4, a sturdy World War I trainer and observation biplane. (You may remember the Jenny from barnstorming shows or as the now-famous plane flying upside down on 100 incorrectly printed airmail stamps.) The toy design proved so popular that Steve and a woodworking buddy, Charles Cullor, made nearly 40 Jennies last Christmas as gifts for deserving children.

***Note:** You'll need ¼"-thick stock for this project. You can either resaw or plane thicker stock to size.*

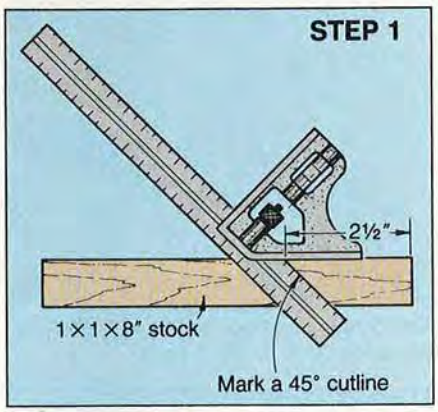
THE FUSELAGE GETS THINGS OFF THE GROUND

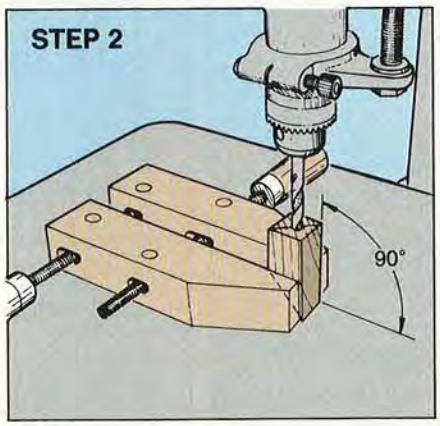
1 Cut two pieces of ¾"-thick stock (we used cherry) to 2¼" wide by 11" long for the fuselage blank (A). Glue and clamp together the pieces face to face with the edges and ends flush. Later, remove the clamps, scrape off the excess glue, and trim the block to 2" wide by 10" long.

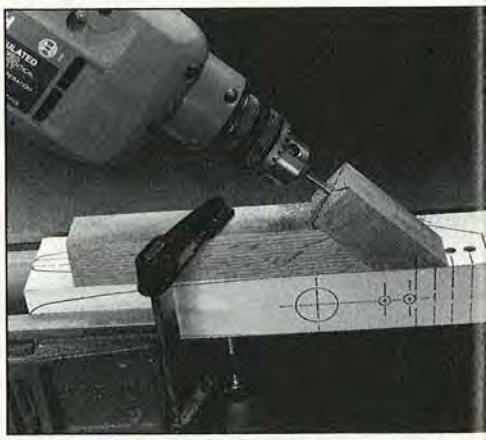
2 With a photocopy and spray adhesive, transfer the full-sized fuselage side- and top-view patterns, hole centerpoints, dado and kerf locations, and notch locations to the fuselage blank. (You could also transfer the marks to the blank with carbon paper.)

3 To make a guide for drilling the exhaust ports, cut a piece of scrap 2×4 to 1×1×8" long. Make a mark and miter-cut 2½" from one end where shown on Step 1 of the drawing at *left*. Now, mark diagonals on the square-cut end of the short piece, hold the piece in a handscrew clamp, and use the drill press and a brad-point bit to drill a 3/16" hole centered through it as shown in Step 2 of the drawing.

4 Glue the short piece to the end of the long piece to form the drill guide shown in the photo *below*.







Clamp the drill guide to the fuselage to drill the angled exhaust portholes.

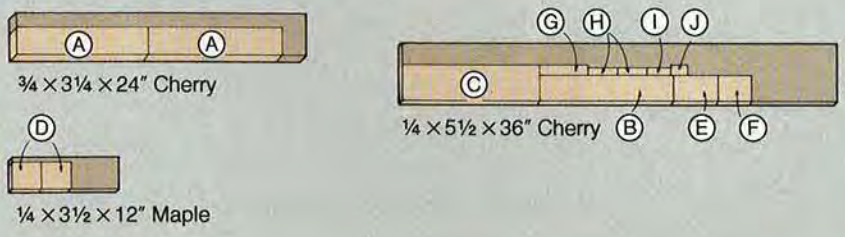
BIPLANE

5 Using a combination square, mark a line on the outside face of the drill guide, aligned with the centerpoint of the 3/16" hole drilled through the 2½"-long piece.

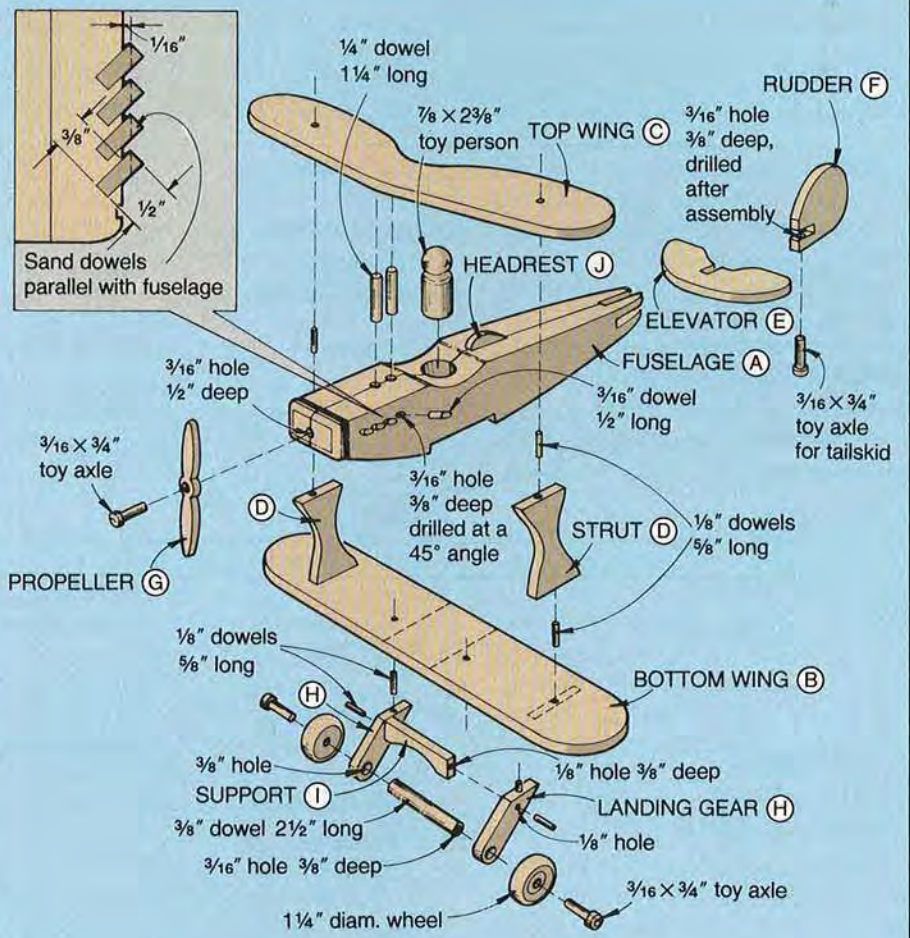
6 With the outside surface of the guide flush with the top surface of the fuselage blank, align the mark on the side of the drill guide with the marks on the top view, and drill the angled 3/16" holes 3/8"deep as shown in the photo on the opposite page. Repeat to drill the holes on other side of the fuselage.

7 Mark the centerpoint, and drill a 3/16" hole ½" deep in the front of the fuselage for the propeller pin (see the Fuselage Patterns Drawing

Cutting Diagram



SECTION VIEW DETAIL



Bill of Materials

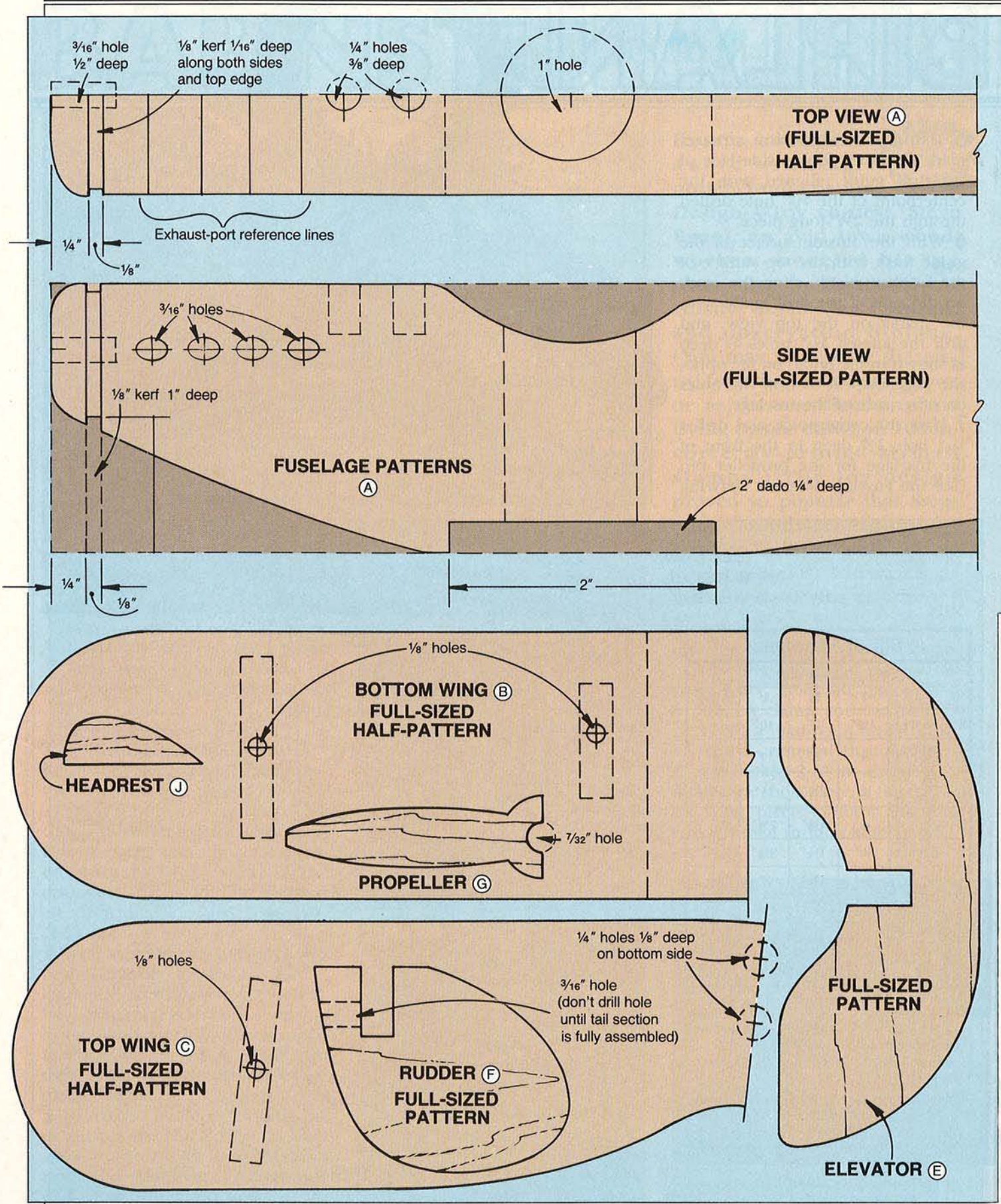
Part		Finished Size* T	W	L	Matl.	Qty.
A*	fuselage	1½"	2"	10"	LC	1
B	bottom wing	¼"	2"	11"	C	1
C	top wing	¼"	2½"	11"	C	1
D	strut	¼"	1⅞"	2½"	M	2
E	elevator	¼"	1½"	3⅞"	C	1
F	rudder	¼"	1⅝"	2"	C	1
G	propeller	¼"	⅝"	3¾"	C	1
H	landing gear	¼"	⅝"	2½"	C	2
I	support	¼"	⅝"	2"	C	1
J	headrest	¼"	⅜"	1"	C	1

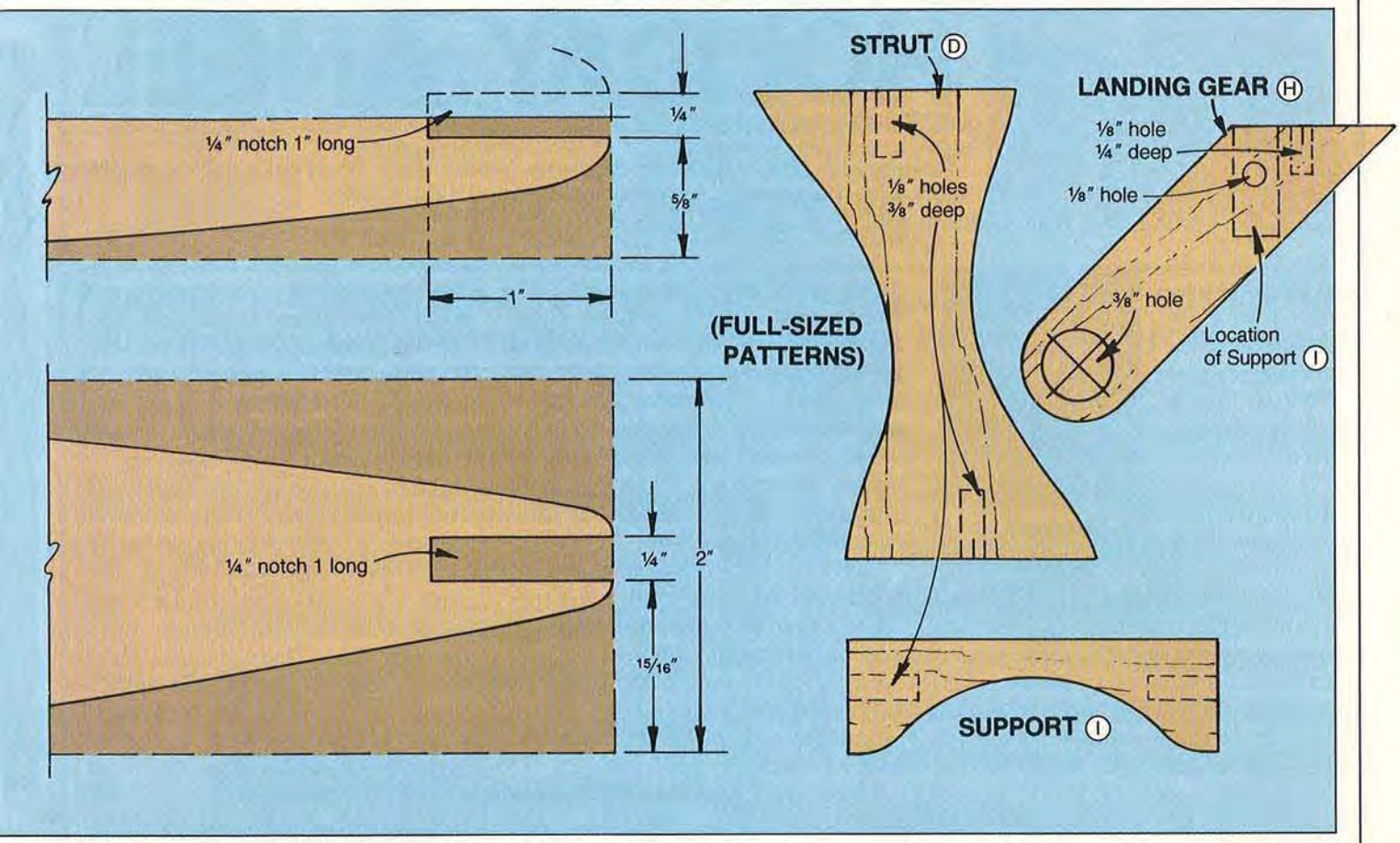
*Initially cut * part oversized. Trim it to finished size according to the how-to instructions.

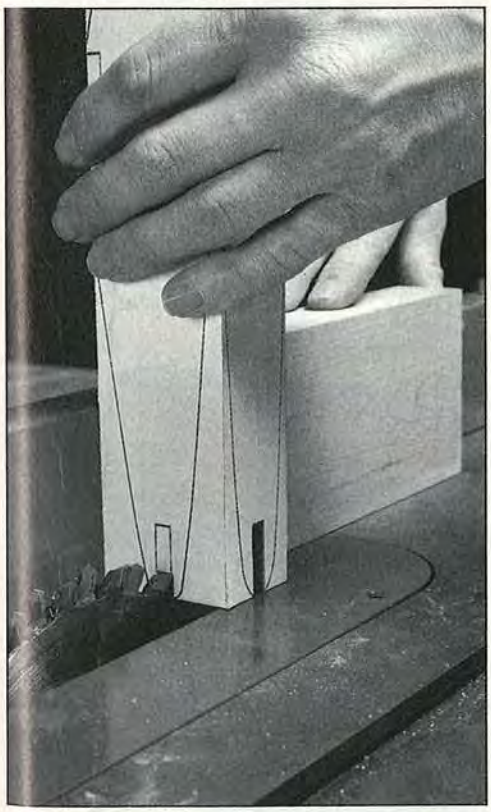
Material Key: LC-laminated cherry, C-cherry, M-maple

Supplies: spray adhesive, ⅛" dowel, ¼" dowel, 3/16" dowel, two 1¼"-diam. wheels, one ⅞ × 2⅜" person, four 3/16 × ¾" toy axles, finish.

Continued


3/16" hole
1/2" deep
1/8" kerf 1/16" deep
along both sides
and top edge
1/4" holes
3/8" deep
1" hole
TOP VIEW Ⓐ
(FULL-SIZED
HALF PATTERN)
Exhaust-port reference lines
1/4"
1/8"
3/16" holes
1/8" kerf 1" deep
SIDE VIEW
(FULL-SIZED PATTERN)
FUSELAGE PATTERNS
Ⓐ
2" dado 1/4" deep
1/4"
1/8"
2"
1/8" holes
BOTTOM WING Ⓑ
FULL-SIZED
HALF-PATTERN
HEADREST Ⓙ
7/32" hole
PROPELLER Ⓖ
1/4" holes 1/8" deep
on bottom side
1/8" holes
3/16" hole
(don't drill hole
until tail section
is fully assembled)
FULL-SIZED
PATTERN
TOP WING Ⓒ
FULL-SIZED
HALF-PATTERN
RUDDER Ⓕ
FULL-SIZED
PATTERN
ELEVATOR Ⓔ





Use a push block when cutting the ¼" dadoes in the tail section.

for reference). Switch to a ¼" bit, and drill a pair of holes ⅜" deep into the top surface of the fuselage blank for the wing supports.

8 Bore a 1" hole through the fuselage for the pilot.

9 Fasten an auxiliary fence to your miter gauge. Using your miter gauge for support, cut ⅛" kerfs 1/16" deep in the top and sides of the fuselage. (To keep the kerfs ¼" from the front of the fuselage, we attached a handscrew clamp to the miter-gauge fence to act as a stop.) Raise your blade 1" above the saw table and cut the kerf across the bottom edge. See the Fuselage Patterns Drawing for reference.

10 Mount a ¼" dado blade to your tablesaw and raise the blade to 1" above the table surface. With the fuselage blank standing on end, use a push block to cut the rudder and elevator notches in the tail as shown in the photo at *left*.

11 Cut a 2"-wide dado ¼" deep across the bottom edge of the fuselage for the bottom wing.

12 With the fuselage on its side, bandsaw the side view to shape. Tape the waste pieces to the fuselage, and cut the top-view pattern to shape. Sand the fuselage smooth.

13 Cut eight 3/16" dowels ½" long, and glue one into each exhaust hole. Sand the ends parallel to the side of the fuselage as shown on the Section View Detail accompanying the Exploded-View Drawing.

NOW, CUT AND SHAPE THE REMAINING PARTS

1 Transfer the full-sized patterns and hole centerpoints for the bottom and top wings (B, C), struts (D), elevator (E), rudder (F), propeller (G), landing-gear pieces (H), landing-gear support (I), and headrest (J) to ¼" stock. (We used ¼" cherry for all but the struts; for contrast, we used ¼" maple for those.) Cut the parts to shape. Also, cut a ⅜" dowel 2½" long for the landing-gear axle.

2 Drill the holes where marked, and sand the parts smooth.

Continued on page 100

CARVE A HOLIDAY ANGEL

Print this article

Celebrate the yuletide season with this festive and versatile pattern from the Heartland's Ron Mackey

Ron Mackey

At Ron Mackey's home in Lincoln, Nebraska, every workday has a holiday theme. Ron carves Christmas items in the summer heat, switches to Easter in winter's cold, and fits other holidays in between.

Ron began carving full-time in 1985. Inspired by his wife Leeta's Christmas ornament collection, his career took off. He now sells his work in 14 states and his designs to the likes of Hallmark Cards.

Although many of Ron's pieces reflect a folk-art carving style, his real love lies in classical European carving. "The angel is a perfect example," Ron says. "It's all knife and gouge work. No finishing with sandpaper allowed!" And, true to old-world craftsmanship, he carves *all* surfaces, including backs and edges, "So they feel good."

Choose the size of your angel, then start carving

By enlarging the tree-ornament angel pattern shown about three times, you'll have the makings of a dandy wall plaque or door hanging. Or, reduce it about 40 percent for a lapel-pin-sized carving.

To make an ornament, start with a 5 5/16×3¾×7/16" piece of basswood. Transfer the pattern to the wood, and cut out the rough with a bandsaw. Next comes the hardest part, according to Ron.

"Drill the hole between the neck, hand, and shoulder with a Forstner bit or a brad-point, the size depending on the angel you're making (pin, 3/32"; ornament, 5/16"; plaque, ½" overlapping holes). Use a gouge or knife to reshape the round hole," Ron advises.

Next, cut down the surface of the angel's back wing. "The more you lower it, the more shadow effect you'll get," says the carver. Ron shaved this angel's wing by one-third the wood thickness—about ¼". Then, redraw the feather lines.

With a knife, make the stop cuts that outline the feathers on both wings. Next, shape them with a flat chisel gouge and a small no. 5 or 7 shallow U-gouge.

Using a no. 5 gouge, carve the depths of the gown drapery with long flowing cuts. "You're actually carving shadows," says Ron.

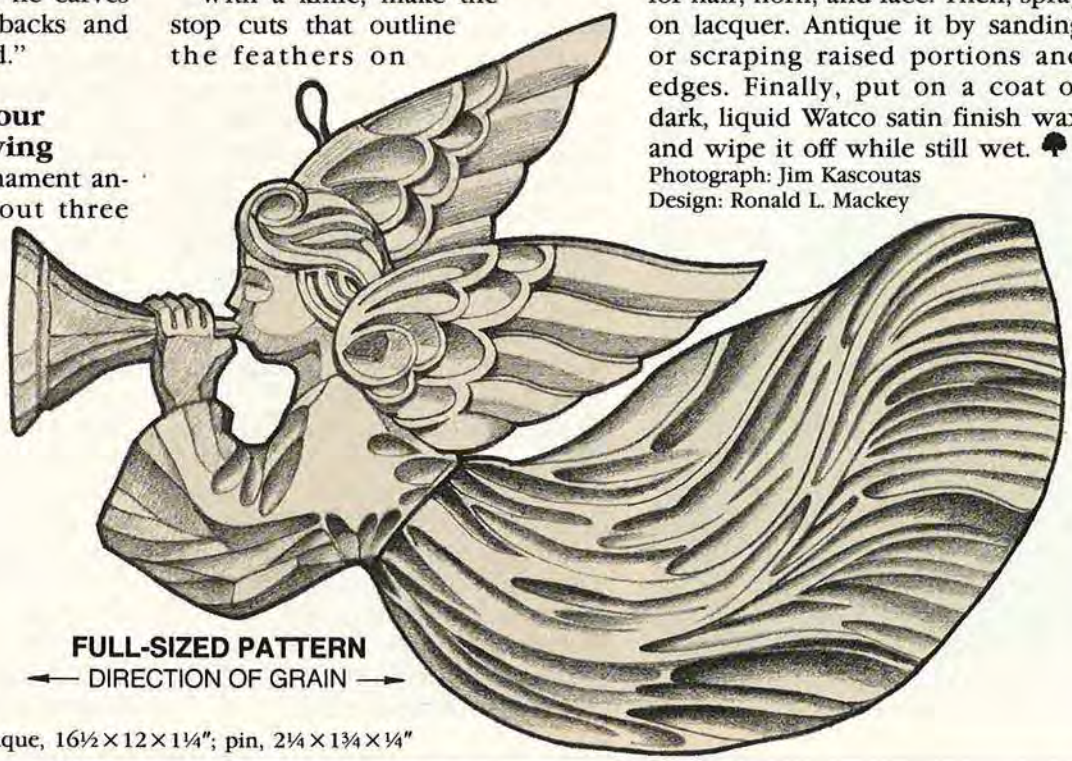
After you complete the wings and gown, turn to the hair and carve it as you did the wings. To shape the face, start at the chin with a U-gouge and cut a chamfer in one continuous motion up to the forehead. Then, make a gouge for the eye socket. With a knife or V-tool, cut a notch for the eye. "If you chip the trumpet," Ron notes, "give her a smaller horn."

Antiquing a heavenly finish

For a clear finish, Ron applies a cabinetmaker's wax over a light stain or oil. To paint the angel, lay down a coat of white acrylic. Add a wash of light blue and other colors for hair, horn, and face. Then, spray on lacquer. Antique it by sanding or scraping raised portions and edges. Finally, put on a coat of dark, liquid Watco satin finish wax and wipe it off while still wet.

Photograph: Jim Kascoutas
Design: Ronald L. Mackey

One in a collection of regional patterns from the nation's top carvers



FULL-SIZED PATTERN
← DIRECTION OF GRAIN →

Other carving block sizes: plaque, 16½×12×1¼"; pin, 2¼×1¾×¼"

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#232		¼" Roman Ogee	¼" R	1½"	¾"	¼"	$18.00
#661		¼" Roman Ogee	¼" R	1½"	¾"	½"	$21.00
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#341		¼" Cove	¼" R	1"	½"	¼"	$13.00
#342		⅜" Cove	⅜" R	1¼"	9/16"	¼"	$14.00
#343		½" Cove	½" R	1½"	⅝"	¼"	$15.00
#644		¾" Cove	¾" R	1⅞"	¾"	½"	$28.00
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#230		¼" Round Over	¼" R	1"	½"	¼"	$12.00
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#355		½" Round Over	½" R	1½"	¾"	¼"	$17.00
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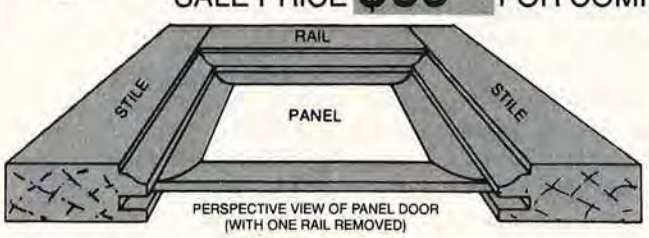

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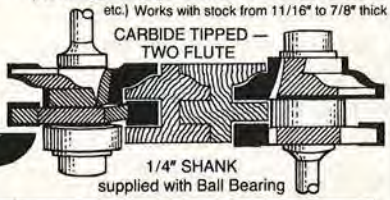

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TOOL INDUSTRY INSIDER

AEG DEVELOPS FUTURISTIC SILENT MOTOR

Imagine a disc-shaped motor that's about ½" thick and 3" in diameter. Now, imagine that motor powering along without making noise, and you have a pretty good idea of a prototype motor that has been developed by AEG in Frankfurt, Germany. While turning at about 100 rpm, the motor generates a lot of torque—we couldn't slow it down by firmly grasping the shaft. With more than 7,600 people involved in research and development in everything from superconductors to environmental protection, it wasn't surprising to see AEG on the forefront of this technology.

The apparatus, called a piezo-electric motor, uses resonant vibrations induced by piezo ceramics rather than the magnetic field created by the windings of universal motors. Currently, all portable power tools use universal motors.

How long before you see this technology in a drill, for example? We put this question to Dr. Wolfgang Schneider, director of AEG's research institute, while on a recent tour of the company's German facilities. "The motor could be used as early as 1991 in the window-lifting device in Mercedes-Benz automobiles (Daimler-Benz owns Mercedes-Benz and AEG). And, the technology is also available to AEG's power tool division."

Wolfgang Scheunemann of AEG's public relations department quickly pointed out that engineers haven't realized all of the motor's potential. "Like the development of the light bulb, we see many improvements ahead for this motor before it gains wide use in tools, automobiles, or any other applications."

A prototype version of AEG's piezo-electric motor produces plenty of torque and no perceptible noise.

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Thanks to the strength of the yen, more and more Japanese manufacturers have seen fit to produce their wares in the U.S. From cars to power tools, Japanese manufacturing facilities have sprouted up around the U.S. during the 1980s. Now, Hitachi plans to assemble power tools in Norcross, Georgia, joining fellow Japanese tool makers Makita and Ryobi who already have U.S. plants. Makita recently doubled the size of its Georgia facility. Ryobi assembles power tools in Chandler, Arizona.

"Manufacturing some of our tools in the U.S. will allow us to deliver those products faster to dealers," a company official told us. "In the past, we had to wait three to four months between the time of order and time of delivery." At present, Hitachi plans to make only demolition and rotary hammers in its Norcross plant.

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TABLETOP EASEL

continued from page 88

3 Transfer the full-sized Canvas Rest and Holder Patterns, hole centerpoints, and dado locations shown on page 88 to the strip. Cut the 1⅛" dadoes ⅛" deep where marked on the back side (the side adjacent the ½" rabbet). Drill 3⁄32" holes ½" deep from the back side (same side as the dadoes), and cut the ends of the pieces to shape.

4 Sand or rout ⅛" round-overs along the edges of the canvas holder and rest where shown on the Exploded-View Drawing.

5 Cut two pieces of wet/dry sandpaper to the sizes shown on the Exploded-View Drawing. Using double-faced tape or glue, adhere the pieces to the rabbets in the canvas holder and rest where shown on the drawing. The sandpaper helps prevent the artwork from sliding around in the rabbet.

FINAL ASSEMBLY

1 Mask the sandpaper adhered to the canvas rest and holder, and apply the finish to all the parts, rubbing lightly with 0000 steel wool between coats. (We applied an aerosol lacquer, Deft Clear Wood Finish.) After the finish dries, remove the masking tape.

2 Fasten the canvas rest and holder to the the center post assembly with #6×¾" brass wood screws and brass washers. Use the same-sized screw to fasten the center post assembly to the spreader.

3 Tape the rear leg (B) in position against the hinge (D). Using the previously drilled 3⁄16" hole in the top of the rear leg as a guide, drill a 3⁄16" hole through the hinge. Cut a 3⁄16" dowel to ¾" in length. Stain the ends of the dowel to match the walnut (walnut dowels are not commonly available in 3⁄16" diameter). With the holes aligned, insert the 3⁄16" dowel through the holes to act as a hinge pin.

Project Design: Jim Boelling
Photographs: Jim Kascoutas; Bob Calmer
Illustrations: Kim Downing; Bill Zaun

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BARNSTORMING BIPLANE

Continued from page 93

THE LANDING GEAR MAKES FOR SMOOTH TAKEOFFS

1 With a brad-point bit in your drill press, drill a 3/16" hole 3/8" deep centered in both ends of the axle.

2 Glue and tape the axle and support (I) between the landing-gear parts (H).

3 Later, drill a pair of 1/8" holes 5/8" deep through the landing gear and into the support. Cut two 1/8" dowels 5/8" long and glue in the holes.

4 With 3/16×3/4" toy axles, secure 1¼"-diameter toy wheels to the landing gear. Be careful to keep the wheels spinning freely.

5 With 1/8" dowels, glue and clamp the landing-gear assembly to the underside of the bottom wing (B). If the 1/8" dowels protrude above the top surface of the bottom wing, sand them flush.

THE WINGS AND PROPELLER COME NEXT

1 Glue and clamp the bottom wing into the dado in the fuselage.

2 Cut four 1/8" dowels 5/8" long. Use two of the dowels to glue and dowel the struts (D) to the bottom wing. Check for square.

3 Cut two 1/4" dowels to 1¼" long. Using these two 1/4" dowels and the 1/8" dowels cut in the previous step, glue and dowel the top wing (C) to the struts and fuselage.

4 Mount the propeller to the plane with a 3/16×3/4" toy axle. To keep the propeller spinning freely, don't push the axle in too far.

ASSEMBLE THE PLANE AND TAXI FOR TAKEOFF

1 Glue the headrest (J) in place. Glue the elevator (E) and rudder (F) into the tail-section notches.

2 Drill a 3/16" hole 3/8" deep through the elevator. Glue a 3/16×3/4" axle in the hole to act as the tail skid.

3 Finish-sand the airplane and apply the finish. (We brushed on two coats of polyurethane.)

Produced by Marlen Kemmet
Project Design: Steven Bruni
Photographs: Hopkins Assoc.; Jim Kascoutas
Illustrations: Kim Downing; Bill Zaun

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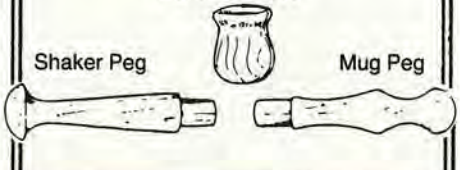

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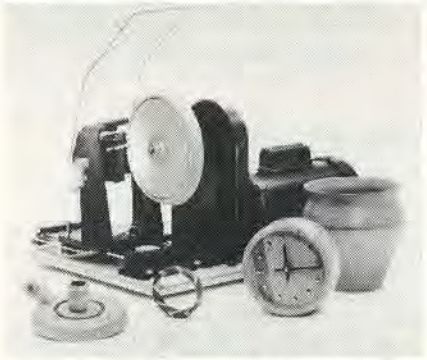

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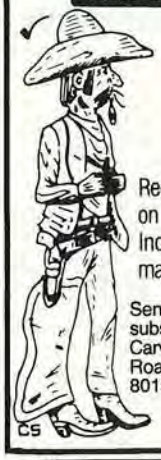

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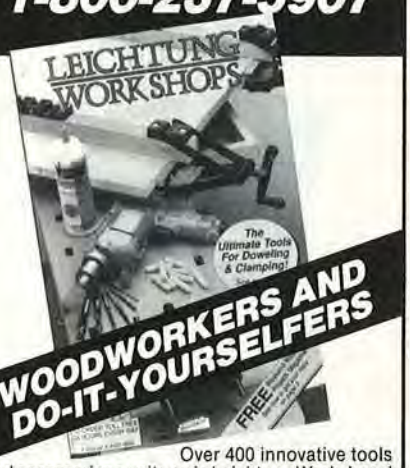

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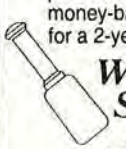

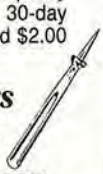

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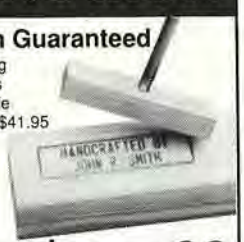

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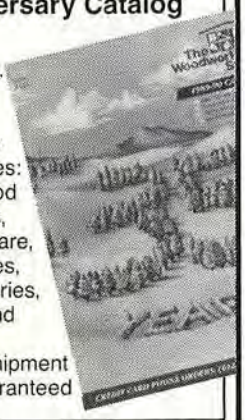

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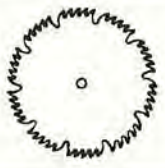

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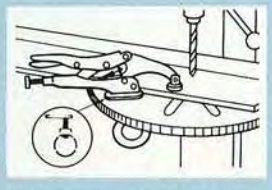

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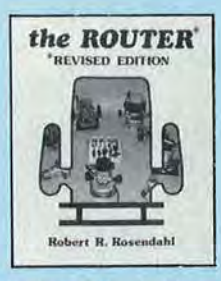

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☐ Build tomorrow's heirloom today! "Merrilegs" is designed to capture the spirit and beauty of a child's loyal steed as well as provide pleasure and satisfaction for the woodworker. Build this Rocking Horse using our full-size, easy-to-make plan. Plan #121, $12.95 ppd. Catalog of 200 professionally designed plans for building furniture – $3.00. FURNITURE DESIGNS, INC., 1827 Elmdale Ave., Glenview, IL 60025. UPS, COD. 312-657-7526.

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☐ Holiday Candle Holder. Made from a wheel, spindle, candle cup and insert. Wood parts and dowels from MIDWEST DOWEL WORKS, INC., 4631 Hutchinson Rd., Cincinnati, OH 45248.

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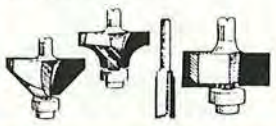

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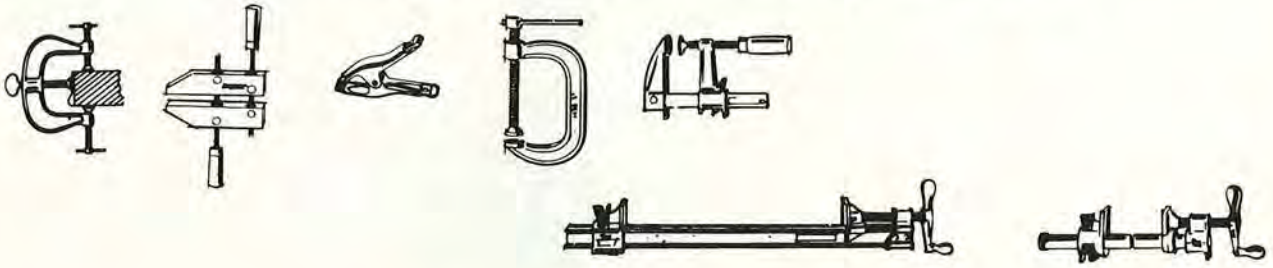

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TO ORDER THESE BOOKLETS, USE COUPON ON PAGE 122

ROUTER ACCESSORIES CATALOG—Is your router still in the box? Get quality parts to make the router a complete workshop. Make panel doors, dovetail drawers, box joints, picture frames, and much more. Make your router more versatile today with these quality accessories that fit all routers. OAK PARK ENTERPRISES LTD. $1.00. *Circle No. 1360.*

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MISCELLANEOUS

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WOODWORKING ASSOCIATION OF NORTH AMERICA — First international association for woodworkers. Benefits include our quarterly magazine *International Woodworking*, specials from selected manufacturers, access to the woodworking network. WOODWORKING ASSOC. OF NORTH AMERICA. 50¢. *Circle No. 2092.*

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DECOY AND WOOD CARVERS WISHBOOK—48-page catalog features wide selection of tools and supplies for decoy carvers, wood carvers, wood turners. Chisels, gouges, sharpening stones, precision grinding tools, Foredom tools, Fire Brush burners, pneumatic sanders, glass eyes, pewter feet, patterns, paints, reference books. P. C. ENGLISH, INC. Free. *Circle No. 2115.*

WOODCARVING TOOLS — Whittlers and carvers — Warren Tool Co. offers a catalog for you full of whittling and carving hand/power tools, books, stones, wood, and supplies. Since 1927, the finest in woodcarvers tools. WARREN TOOL CO., INC. $1.00. *Circle No. 2185.*

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CLAMPS—Ever wish you had more hand screw wood clamps but had difficulty justifying the cost, $15-$30 ea.? Build your own, any size, for around $3 each, using readily available hardware store items. No specially threaded screws to buy. Clamps operate the same as manufactured ones. No special tools needed for construction. Complete plans, instructions, shop tips, and metal drilling jig. CNJ ENTERPRISES. $19.95. *Circle No. 2220.*

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Model		List	Sale
23-700	Wet/dry grinder	201	159
23-680	6" bench grinder ¾ H.P.	81	66
23-880	8" bench grinder ½ H.P.	136	105
23-980	10" bench grinder 1 H.P.	246	235
11-950	8" drill press	154	135
14-040	14" drill press	313	309
40-150	15" hobby scroll saw	178	139
28-160	10" hobby band saw	189	144
31-050	1" belt sander 2.0 amp	93	75
31-460	4" belt/6" disc sander	178	139
31-340	"NEW" 1" belt/8" disc sander	225	169

DELTA STATIONARY

34-761	10" unisaw 1½ H.P.	1715	1339
34-740	Super 10" motorized table saw	590	439
34-429	10" tilting arbor bench saw 1½ H.P.	1479	1049
33-990	10" radial arm saw	727	565
11-072	32" radial drill press	487	399
37-280	6" motorized jointer	440	359
50-179	¾ H.P. 2 stage dust collector	435	339
50-180	1 H.P. dust collector	535	425
50-181	2 H.P. dust collector	760	619
37-154	Deluxe DJ-15 6" jointer w/¾ H.P. motor	1288	999
33-150	8¼" saw buck	770	499
33-050	"NEW" 8¼" Sawbuck	742	559
34-330	"NEW" 8¼" Table Saw 13A	321	245
34-670	10" motorized table saw	437	389
34-985	¼ H.P. stock feeder	698	489
32-100	"NEW" stationary plate jointer	645	459
36-040	"NEW" 8½ compound miter saw	216	169

MILWAUKEE TOOLS

0395-1	9.6V cdlss. drill w/case	264	159
0219-1	9.6V cdlss. drill w/case	277	165
0385-1	7.2V cdlss. drill w/case	174	115
0224-1	⅜" drill 4.5A magnum	189	112
0234-1	½" drill 4.5A mag 0-850 rpm	199	115
0244-1	½" drill 4.5A mag 0-600 rpm	199	115
0222-1	⅜" drill 3.5A 0-1000 rpm	174	105
0228-1	⅜" drill 3.5A 0-1000 rpm	164	98
0375-1	¾" close quarter drill	208	129
0379-1	½" close quarter drill	243	145
6539-1	Cordless screwdriver 190 rpm	113	69
6540-1	Cdlss. screwdriver w/bits & cse	154	99
6545-1	Cdlss. screwdriver 200 & 400 rpm	120	75
3102-1	Plmbrs rt angle drill kit	330	189
3002-1	Electricians rt angle drill	320	185
5399	½" D-hdle ham drill kit	304	185
1676-1	H.D. Hole Hawg w/cs	415	229
6511	2 sp SawZall w/cs	214	125
6405	8¼" circle saw	219	129
6750-1	Drywall gun 0-4000 4.5A	154	95
6507	TSC SawZall w/case	229	129
6170	14" chop saw	430	259
6012	Orbital sander 3⅝"x7⅛"	189	109
6014	Orbital sander 4½"x9¼"	199	115
6305	6¼" cordless circle saw	299	175
6753-1	Drywall gun 0-4000 3.5A	134	83
8977	Var. temp heat gun	114	75
5397-1	⅜" v. spd. hammer drill kit	232	149
5371-1	½" v. spd. hammer drill kit	318	179
3107-1	½" v. spd. rt angle drill kit	340	195
6754-1	Drywall gun 0-4000 4.5A	179	119
6747-1	Drywall driver-0-2500	154	95
0230-1	⅜" drill 0-1700 rpm	179	105
3300-1	½" v. spd. magnum rt angle kit	299	179
5650	Router 1½ H.P.—10 amp	299	189
5680	Router 2 H.P.—12 amp	350	225
5455	⅞" polisher 1750 rpm	209	129
6215	16" chain saw	280	179
8975	Heat gun	89	59
6365	7¼" circular saw	195	114
6366	7¼" circ saw w/fence & bld	204	119
6368	7¼" circ saw w/fence, bld & cse	233	135
0216-1	2 spd cordless drill Hi-torque	222	135
0235-1	½" drill keyless chuck mag	209	119
6016	¼ sheet pad sander	79	52
6145	4½" grinder 10,000 rpm	154	95
6142	6145 w/cse & access.	192	119
0239-1	½" drill keyless chuck	199	114
6749-1	Drywall gun 0-2500 4.5A	189	125
6377	7¼" worm drive saw	295	165

FREUD SAW BLADES

⅝" Bore—Industrial Grade

CARBIDE TIPPED SAW BLADES

Item No.	Description	Diam.	Teeth	List	Sale
LU72M010	Gen. Purp. A.T.B	10"	40	58	39
LU81M010	Gen. Purp. TiCo	10"	40	65	43
LU82M010	Cut-off	10"	60	77	48
LU84M011	Combination	10"	50	65	42
LU85M010	Super Cut-off	10"	80	96	57
LM72M010	Ripping	10"	24	57	38
LU73M010	Cut off	10"	60	70	44
LU87M010	Thin kerf	10"	24	60	42
LU88M010	Thin kerf	10"	60	74	49
LU98M010	Ultimate	10"	80	107	79
LU89M010	Non-ferrous metal	10"	72	87	65
PS203	Gen'l Purp.	7¼"	24	25	19
PS303	Plywood	7¼"	40	36	25
DS306	6" Dado - Carbide			164	109
DS308	8" Dado - Carbide			196	119
FB	1¾"x⅝" Biscuits 1000-Qty.			32	27
F10	2¼"x¾" Biscuits 1000-Qty.			32	27
F20	2¾"x1" Biscuits 1000-Qty.			34	29
FA	Assorts Biscuits 1000-Qty.			34	29
WC104	4 pce. chisel set w/cse ¼"-1"			54	44
WC106	6 pce. chisel set w/cse ¼"-1"			73	56
WC110	10 pce. chisel set w/cse ¼"-1½"			119	85
FB100	16 pce forstner bit set ¼"-2⅛"			284	159
94-100	5 pce router bit door assortment			288	159
JS100	Biscuit Jointer w/case			300	159
CE82	Planer w/cse carb blds. & guide			218	129
FT2000	3¼ H.P. plunge router			299	185

MAKITA CORDLESS

Model		List	Sale
6070DW	⅜" var. spd. rev. drill, 7.2v	123	79
6071DWK	⅜" var. spd. rev. drill w/removable batt, 7.2v	190	109
5090DW	3⅜" saw kit, 9.6v	243	135
5600DW	6¼" circular saw, 10.8v	317	175
6010DWK	⅜" cordless drill kit, 7.2v	155	89
6010SDW	¾" cordless drill, 7.2v	103	65
DA3000DW	⅜" angle drill, 7.2v	238	130
8400DW	Hammer drill kit, 9.6v	258	155
4390DW	9.6 volt cdls. recip saw kit	218	124
4300DW	Jig saw kit comp., 9.6v	220	125
6010DL	⅜" drill w/flashlight, 7.2v	198	115
6710DW	Cordless screwdvr kit, 7.2v	186	105
6012HDW	2 spd. driver drill w/clutch & case, 9.6v	224	115
6092DW	V/spd. drill, kit complete	237	120
6093DW	V/spd. drill w/clutch—complete	248	125
6891DW	Drywall gun 0-1400, 9.6v	225	119
632007-4	9.6 volt battery	49	30
632002-4	7.2 volt battery	42	28
5007NBA	7¼" saw w/elec. brake	228	125
5008NBA	8¼" saw w/elec. brake	276	155
B04510	¼ sheet pad sander	80	50
9900B	3"x21" belt sander w/bag	254	145
9924DB	3"x24" belt sander w/bag	266	155
9045B	½ sheet finish sander	216	125
9045N	½ sht fin. sand. w/bag	219	127
4200N	4⅜" circ. saw 7.5 amp	213	125
5201NA	10¼" circ. saw 12 amp	560	290
4301BV	Orb. v/sp jig saw 3.5 amp	274	149
JR3000WL	2 sp recip saw w/cse	220	122
JR3000V	Vs. recip saw w/case	224	125
LS1020	New 10" miter saw	440	235
9820-2	Blade sharpener	354	205
410	Dust collection unit	480	279
3705	Offset trimmer	255	145
1900BW	3¼" planer w/case	198	115
1100	3¼" planer w/case	381	219
9207SPC	7" sander-polisher	262	149
3601B	1¾ H.P. router	242	139
3700B	½ H.P. trimmer	180	109
9501B	4" grinder, 3.5 amp	137	69
B04530	6" round sander	95	60
B04550	¼" sheet pad sander w/bag	85	59
DA3000R	⅜" angle drill	256	145
DP4700	½" v/sp w/rev. 4.8 amp	198	119
HP2010N	¾" v/sp hammer drill w/cse	285	165
2708W	8¼" table saw	474	259
2711	10" table saw w/brake	800	469
GV5000	Disc sander 5"	109	69
6800DB	2500 rpm 3.5 amp, drywall	140	89
6800DBV	0-2500 rpm 3.5 amp, drywall	154	95
6801DB	4000 rpm 3.5 amp, drywall	140	89
6801DBV	0-4000 rpm 3.5 amp, drywall	154	95
2030N	12" planer/jointer	2970	1699
2040	15⅞" planer	2470	1449
1805B	6½" planer kit w/case	646	359
JV1600	var. speed jig saw	220	129
JV2000	var. speed orb. jig saw	242	145
5005BA	5½" circular saw	211	119
9503BH	4½" sander-grinder	153	89
6404	⅜" drill 0-2100 rpm, 2 amp	102	65
6510LVR	⅜" drill rev. 0-1050 rpm	137	79
6013BR	½" drill rev. 6 amp	240	139
5402A	16" circular saw - 12 amp	605	339
3612BR	3 H.P. plunge router	376	199
9401	4"x24" belt sander w/bag	302	169
3620	1¼ H.P. plunge router w/cse	182	105
4302C	V/spd. orb. jig saw	287	155
5077B	7¼" Hypoid saw	248	139
LS1440	14" Miter saw	624	409
2414	14" cut-off saw AC/DC	350	209
5007NB	7¼" circ saw 13 amp	209	119
3612B	3 HP plunge router sq/b	376	199

SKIL SIZZLERS

Model		List	Sale
5510	(551) 5½" circ saw	112	98
5625	(552) 6½" circ saw	175	124
5656	(553) 7¼" circ saw	132	119
5665	(554) 8¼" circ saw	204	145
5750	(807) 7¼" circ - drop foot	198	142
5765	(808) 8¼" circ - drop foot	216	149
5790	(810) 10¼" circ - drop foot	400	275
5825	(367) 6½" worm saw	229	148
5865	(825) 8¼" worm saw	250	164
4580	Vari - orbit jig saw w/cse.	144	105
3810	10" Miter saw	263	219
595	3"x21" sander w/bag 5.5A	197	125
7565	¼" palm sander	52	49
7313	3x18 belt sander 4.5A	72	64
77	7¼" worm drive saw	230	145
5350	2½ HP circ. saw	80.99	74
5250	2¼ HP circ. saw	68.99	64

XTRA SPECIAL BY SKIL

2735-04	12v V.Spd. Cordless Drill comp. w/cse & 2 Batt.	210	135

LEIGH DOVETAIL JIGS

D1258-12—List 314.00—Sale 265.00
D1258-24—List 375.00—Sale 305.00
LEIGH INSTRUCTIONAL VIDEO—SALE 29.00!!

HITACHI TOOLS

Model		List	Sale
TR6	Trimmer	177	95
TR8	Plunge router, 1½ H.P.	219	119
TR12	Plunge router, 3 H.P.	354	175
C10FA	10" dlxe. miter saw	490	269
C8FB	8½" slide compound saw	859	479
FREUD	LU91M008 - 8½" c/bld 48 tooth	58	45
C15FB	15" miter saw	745	495
FREUD	LU85M015 - 15" c/bld 108 tooth	181	115

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DELTA TOOLS

34-444 Table Saw Complete w/1½ H.P. motor & stand 619.00

34-445—34-444 Table Saw complete w/30" Unifence 779.00

33-890 12" Radial Arm Saw 1½ H.P. complete w/legs 1179.00

28-283F 14" Band Saw w/enclosed stand & ¾ H.P. motor 685.00

70-200 NEW 20" Drill Press 719.00

17-900 16½" Floor Drill Press 379.00

40-601 18" Scroll Saw w/stand and blades 689.00

DELTA #34-080 10" MITER BOX
XTRA SPECIAL 209.00 List 289.00

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PIRANHA By Black & Decker

CARBIDE TOOTH SAW BLADE

Model#	Diameter	#Teeth	List	Sale
73-716	6-1/2	18	13.10	7.10
73-756	6-1/2	36	28.96	16.30
73-717	7-1/4	18	13.14	7.10
73-737	7-1/4	24	16.36	9.00
73-757	7-1/4	40	29.72	16.35
73-758	8	40	42.04	24.15
73-759	8-1/4	40	42.86	24.60
73-719	8-1/4	22	18.96	10.60
73-739	9	30	31.48	16.25
73-769	9	60	66.58	35.90
73-715	5-1/2	16	13.00	7.30
73-704	7-1/4	18	19.50	12.49

THE SPECIAL BLACK AND DECKER PIRANHA BLADE PRICES ARE BACK!!!

Model#	Diameter	#Teeth	List	Sale
73-740	10	32	33.20	15.95
73-770	10	60	61.46	29.95
73-711	10	50	65.08	29.95

JORGENSEN STEEL I-BAR CLAMPS

Model	Size	List	Sale
7224	24"	25.82	16.50
7236	36"	27.71	17.50
7248	48"	30.44	18.50
7260	60"	33.90	21.99

ADJUSTABLE HANDSCREWS BY JORGENSEN

Item No.	Jaw Length	Open Cap	List	Sale	Box of 6
#3/0	6"	3"	14.83	8.50	47.60
#2/0	7"	3½"	15.94	9.50	51.00
#0	8"	4½"	17.74	10.25	58.40
#1	10"	6"	20.29	12.39	68.10
#2	12"	8½"	23.29	14.25	78.00
#3	14"	10"	29.53	18.30	101.75
#4	16"	12"	38.38	23.75	139.95

STYLE 37 2½" Throat ¼"x¾" JORGENSEN

Item No.	Jaw Length	List	Sale	Box of 6
3706	6"	8.86	5.99	33.95
3712	12"	9.81	6.49	36.75
3718	18"	10.83	6.99	39.70
3724	24"	11.83	7.59	43.10
3730	30"	13.19	8.59	48.75
3736	36"	14.43	9.49	53.95

PONY CLAMP FIXTURES

Model		List	Sale	Lots of 12
50	⅜" black pipe clamps	12.48	7.50	80
52	½" black pipe clamps	10.41	6.00	65

STYLE J. ADJUSTABLE HANDSCREW KITS

Model	Length Jaws	List	Sale
J04	4	7.10	5.39
J06	6	8.13	5.89
J08	8	9.12	6.59
J10	10	10.66	7.29
J12	12	13.21	8.59

BOSCH

Model		List	Sale
1581VS	Top hdle. jig saw	239	129
1582VS	Barrell grip jig saw	225	123
Bosch metal case for above jig saws		34	28
Bosch blade assortment for jig saws 30 of Bosch's best selling blades		23.99	
1942	Heat gun 650°-900°	99	69
3268	Heat gun 600° & 1000°	89	65
1272	3"x24" belt sander	279	165
1272D	3"x24" B.S. w/bag	299	175
1273	4"x24" belt sander	295	169
1273D	4"x24" B.S. w/bag	315	182
11-212	Bulldog ¾" SDS rotary	339	195
1195VSRK	⅜" v/spd hammer drill	215	110
1193VSR	½" v/spd hammer drill	229	135
1608	5.6 amp lam trimmer	140	89
1608L	Same as above w/trimguide	145	92
1608T	5.6 amp tilt base trimmer	159	99
1609	5.6 amp offset base trimmer	205	122
1609K	Lam installers kit w/1609	295	169
Offset base, trimmer tilt base, trimguide, ⅛" collet, collet nut, wrenches, hex keys and case			
1601	1 H.P. Router 25,500 rpm	165	105
1602	1½ H.P. Router 25,000 rpm	199	125
1603	1½ H.P. D handle router	223	135
1604	1¾ H.P. 2 hdle. router	219	119
1604K	Same as above w/cse & access.	259	165
1605	1¾ H.P. D hdle. Router	243	145
3258	3¼" planer w/blade guard	210	129
3270D	3"x21" belt sander w/bag 5A	225	135
1273DVS	V/spd. 4x24 belt sander	339	189
1611	3 H.P. plunge router	349	198
1611EVS	"NEW" 3 H.P. elec. v/spd. plunge router	410	255
1651	7¼ circ. saw drop foot	179	99
1654	7¼ circ. saw pivot base	179	99
1632VSRK	Recip. saw 8.4A orb. v/spd.	225	135
3050 VSRK	"NEW" 9.6V v/spd. cdls. drill w/cse & 2 batteries	235	159

BOSTITCH AIR NAILERS

Model		List	Sale
N80C-1	Utility coil nailer	730	405
N80S-1	Stick nailer	760	409
T36-50	Sheathing & decking stapler	550	309
N12B-1	Coil roofing nailer	725	405
N60FN-2	Finishing nailer	595	355
T31	Brad nailer	245	149

SENCO AIR NAILERS

Model		List	Sale
SFN1	Finishing nailer 1" - 2"	377	268
SFN2	Finishing nailer 1½" - 2½"	571	398
SN2	General purpose 1⅞" - 3"	621	445
M2	General purpose 1¾" - 2"	475	349
SN4	General purpose 2" - 3½"	685	475
LS2	Pinner ⅝" - 1"	351	255
SKS	Stapler ⅜" - 1½"	351	249
LS5	Pinner, 1"-1½"	399	289
PW-RFR	Roofer, ½"-1¼"	351	249

WORKMATES By Black & Decker

79-032	#200, 23#	103.00	75.00
79-033	#300, 28#	117.00	79.00
79-034	#400, 35#	152.00	99.00

JET TOOLS

Model	Description	List	Sale
JBS-14MW	14" band saw, 1 H.P.	482	375
JTS-10	10" table saw w/stand, 1½ H.P.	554	435
JTS-12	12" table saw w/stand, 1½ H.P.	630	495
JWS-18	½"spindle shaper w/stand, 1 H.P.	479	365
JJ-4	4" jointer, ½ H.P.	310	269
JJ-6	6" jointer, ¾ H.P.	465	369
JWP12	12½" bench planer, 2 H.P.	569	385
JSG-6	6" x 48" belt & 12" disc sander, 1½ H.P.	534	485
OR1012	10" bench drill press, ½ H.P.	179	175
OR1458	14" bench drill press, ½ H.P.	279	259
OR1758	17" bench drill press, ½ H.P.	319	289
OR1458F	14" floor drill press, ¾ H.P.	369	339
OR1758F	17" floor drill press, ¾ H.P.	395	349
DR2501F	20½" floor drill press, 1 H.P.	655	529

RYOBI SPECIALS

Model	Description	List	Sale
R500	2¼ H.P. plunge router	326	159
TS251U	10" miter saw	392	179
TS251US	10" miter w/acc. kit & 60 tooth carbide blade	435	219
AP10	10" surface planer 13 amp	820	358
RA200	8¼" radial arm saw	515	245
RE500	3 H.P. plunge router	398	199
R150K	1 H.P. plunge router w/cse	206	99
BE321	3"x21" v/spd. belt sander	259	125
BD1020ARK	7.2v cdls. drill w/cse	193	79

PORTER CABLE

630	1 H.P. router 6.8 amp	175	110
690	1½ H.P. router 8 amp	225	124
691	1½ H.P. router D hdle	245	135
536	1½ H.P. speedmatic router	310	195
518	3 H.P. 5 speed router	560	339
520	3 H.P. 15 amp router	510	319
309	3.8 amp lam trimmer	135	85
695	1½ H.P. router/shaper	310	195
696	H.D. shaper table	170	119
351	3"x21" belt sander w/o bag	225	125
352	3"x21" belt sander w/bag	235	129
360	3"x24" belt sander w/bag	310	179
361	3"x24" belt sander w/o bag	290	175
362	4"x24" belt sander w/bag	325	185
363	4"x24" belt sander w/o bag	310	179
7556	½" right angle drill	295	175
315-1	7¼" top hdle 13 amp circ saw	195	115
9315-1	315-1 comp. w/cse. & carb. bld.	225	129
617	7¼" pushhandle 13 amp	195	115
9617	617 comp w/cse. & carb. bld.	225	129
358-1	8¼" top handle 13 amp	205	135
314	4½" trim saw 4.5 amp	215	125
548	X HD bayonet saw	265	169
9548	X HD bayonet saw w/case	290	179
9629	Recip saw v/sp 8 amp	235	135
9627	Recip saw 2 speed 8 amp	225	125
656	⅜" H.D. vsp drill 0-1200 rpm	185	122
621	⅜" H.D. v spd. 0-1000 rpm	155	95
320	Abrasive plane 3 amp	160	99
9118	Porta plane 7 amp kit	335	189
9652	Versa plane 10 amp kit	430	275
7545	0-2500 drywall gun 5.2 A	169	105
7540	0-4000 5.2 amp gun	165	99
505	½ sheet pad sander	195	114
7511	⅜" v spd. drill 5.2 amp	185	109
7514	½" v spd. drill 0-750	195	119
303	Paint remover	235	149
304	7" disc sander 4000 rpm	200	125
305	7" disc polisher 2000 rpm	200	129
357	3¼" planer 6.5 amp	225	148
537	1½ H.P. D hdle router	325	209
7548	Top hdl jig saw 4.8 amp	230	125
7648	Barrel grip jig saw 4.8 amp	225	135
330	Speed block sander ¼ sht	97	58
555	Plate biscuit jointer w/cse.	299	165
345	6" saw boss 9 amp	179	99
5060	"Stair Ease" stair templet	194	129
5061	"Stair Ease" hard wood	204	139
659	0-4000 drywall gun 4 amp	130	79
100	⅛ H.P. router	165	99
5003	Dovetail template kit	99.50	79
5009	Mortise & Tenon jig	54.95	49
7308	laminate slitter	190	139
5116	omni-jig	395	269
9647	TIGER CUB recipro saw	195	119
9850	12 volt cordless drill w/cse.	230	129
8500	Extra 12v battery	48	33
NEW Tools By Porter Cable!			
7399	5.6 amp drywall cutout unit	120	79
7310	5.6 amp lam trimmer	145	95
7312	5.6 amp offset base lam trimmer	209	125
7319	5.6 amp tilt base lam trimmer	165	105
97310	LAM TRIM KIT W/STD. BASE, TILT BASE, OFFSET BASE, SLITTER BASE, GUIDE & CSE	330	189
7334	3.7 amp 5" random orbit sander 6000 rpm	205	129
693	1½ H.P. plunge router	280	169
97750	½" v/spd hammer drill w/cse	260	169
6931	Plunge router base	120	79

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FINISHING TOUCHES

Print this article

FILL 'ER UP

Oh no! You're almost out of diesel fuel and there's not a service station in sight. "Never fear," you say, as you pull over and fill 'er up at the nearest *copaiba* tree.

That can be a real situation in Brazil's Amazon, where the copaiba tree grows. Melvin Calvin, a professor of chemistry at the University of California at Berkeley, can attest to the fuel value of copaiba oil. In his studies of the tropical forests, Calvin learned that harvesters drill a hole into the copaiba, plug it, and then, usually twice a year, drain oil from the hole at a rate that can reach 25 liters (about six and one-half gallons) in 24 hours.

Usually, it's sold as a base for perfumes. However, Calvin reports that, in the forest, he has seen the oil used for diesel fuel, right from the tree. A full tank sure adds up to a long, long wait, but the price is right.

INVESTING IN GROWTH

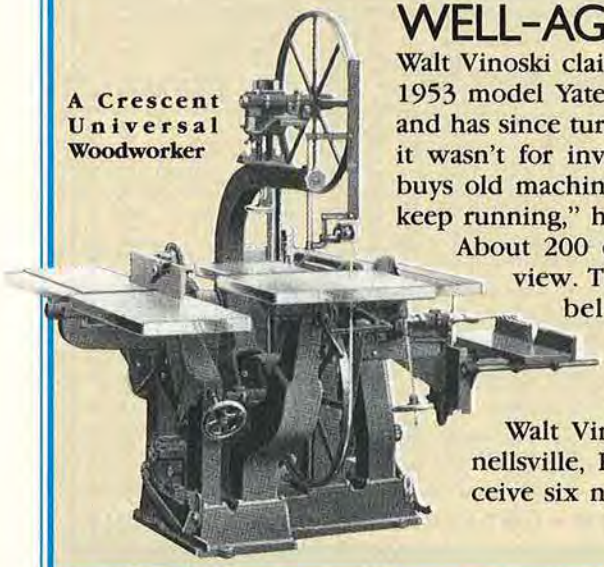
Vern and Lula Johnson paid $4,200 for their 40-acre Washington-state farm in 1944, and that included a home and outbuildings. Recently, Lula, now a widow, sold off the Douglas fir timber from just six acres for 38 cents a board foot, or a total of $252,000!

The Weyerhaeuser Company opened its wallet wide for the high-quality, 85-year-old trees expected to yield more than 650,000 board feet of lumber. More than 40 years of selective logging and thinning, and patience, paid big dividends.

COUNT ON CARVERS

WOW! The tremendous response to the "Calling All Carvers" item on this page in the January 1988 issue resulted in a list of carving clubs that at press time numbers more than 300. Now, if you want to join a carving club, but don't know where to turn, we can help. Send a self-addressed, stamped envelope to WOODMATES, *WOOD*® Magazine, P.O. Box 11454, Des Moines, IA 50336-1454. We'll match you up.

WELL-AGED MACHINES



A Crescent Universal Woodworker

Walt Vinoski claims he picked up his 24-inch, 1953 model Yates American planer for $2,200 and has since turned down $10,000 for it. But, it wasn't for investment that this 29-year-old buys old machines like the planer. "They just keep running," he says.

About 200 other woodworkers share his view. That's about how many people belong to the Antique Woodworking Power Tool Association (AWPTA). Contact the AWPTA by writing to Walt Vinoski at P.O. Box 1027, Connellsville, PA 15425. It costs $10 to receive six newsletters a year.

ON-THE-JOB CLASSES

Theo Fossel

Every couple of months or so, *WOOD* staff members break from routine to try their hand at a new skill during a scheduled in-house seminar.

Visiting craftsmen have included woodturners, carvers, and experts on different tools. Last spring, staffers were treated to an impromptu seminar by English stickmaker Theo Fossel.

Theo makes all sorts of walking sticks, and he's so convinced of their revival that he knows no bounds in talking them up. After our hands-on experience, we see why. By Jove, sticks are great!

For an afternoon, several of the staff carved away at handles. Theo shared the secrets of stick-bending, handle-fitting, and adding a ferrule. Watch for our February 1990 issue for an at-length visit with Theo.

Darlene Reynolds and Jodi Downing pick up tips from an English stickmaker.

Theo has written a book, *Walking & Working Sticks* ($13 ppd.), that introduces the materials and techniques. To order, send a check or money order to: *Theo Fossel, Dept. W, P.O. Box 5775, Shreveport, LA 71135.*

Photographs: Bill Krier; Peter Stephano Illustration: Jim Stevenson

MAKE THE ARTISAN'S CHOICE

Castors Set and Stock Pusher shown on Model 63 are Optional.

As "the" producer of top end industrial woodworking machines since 1921, Powermatic now focuses their engineering expertise and resources for the craftsman, contractor and home hobbyist.

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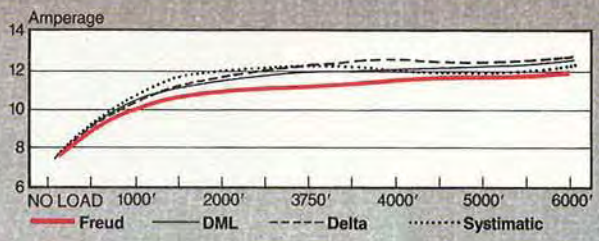

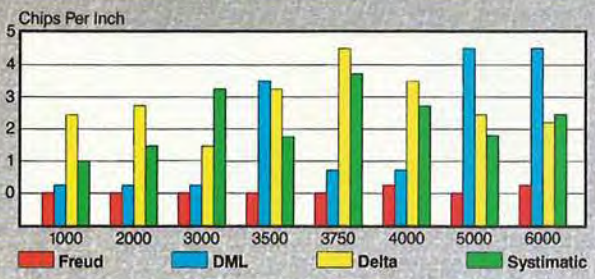

An independent test conducted by Pittsburg State University compared Freud's new HOOK Carbide blade with blades from Delta, DML (Dyanite), and Systematic.

First, quality of cut was determined by the amount of chip out found on the finished edge of a double faced laminate board. The Freud HOOK Carbide blade significantly out performed the other blades by producing an almost chip free edge!!

Another finding showed sharper blades required less power (amperage) to make a cut. The Freud HOOK Carbide blade used less power and therefore out performed the competition by staying sharper longer.

Your local Freud distributor has a complete copy of the Pittsburg State University report and will be glad to show you their findings.

See for yourself how The NEW HOOK CARBIDE BLADE from Freud has been proven to be the best blade for your cutting needs!!

Call us today for the name of your local Freud distributor.

Stock #	Dia.	Teeth	Bore
LU98M008	8″	64	5/8″
LU98M009	9″	72	5/8″
LU98M010	10″	80	5/8″
LU98M012	12″	96	1″
LU98M014	14″	108	1″

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TALKING BACK

Continued from page 12

Here's how Delta views "reverse engineering"

While the tablesaw article in your December 1989 issue was informative and did a good job of tabulating the tablesaw specifications, further insight into woodworking tools, especially those made in Taiwan, may be helpful.

It is a relatively easy and common practice by many importers to buy a successful U.S.-made product, and then "reverse engineer" it in Taiwan. However, in this situation, the copier does not have access to the product's engineering drawings and data associated with the product. This prevents the copier from knowing how flat the table must be, how precise the arbor is, how the various parts are meant to interact with one another, and what the best machining methods are for key parts. This is not to say that a Taiwanese saw is always a poorer product, but that a copy of another's original design will most often have little chance of being as good.

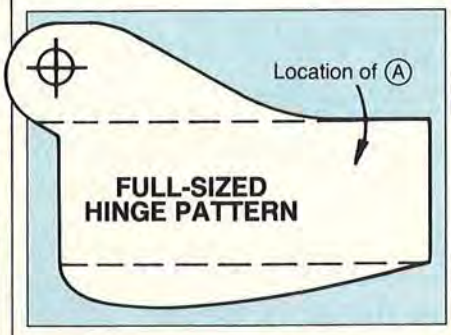
We feel that it also is important to point out that while the section of your article on "Contractor's Style" saws correctly states that the other saws in this category are basically copies of Delta's 34-440, it fails to mention in the "Cabinetmaker's Style" section that the Jet, Grizzly, and Lobo are all Taiwan copies of Delta's Unisaw.

Delta has engineered and manufactured tablesaws for over 50 years. This includes heavy-production saws in Brazil, Unisaws and contractor's saws in Tupelo, Mississippi, and homeshop saws in Taiwan. Our Brazil and Taiwan inspectors and engineers use the same rigid quality-control standards that apply to our U.S. facility.

—Louis C. Brickner, vice president of engineering and product development

Easel folds better with a skinny leg

While building a bunch of the tabletop easels featured in the December 1989 issue, we discovered that a Bill of Materials dimension



for the rear leg (B) doesn't match the full-sized drawing on page 88. The rear leg should be ⅝" thick, as correctly shown in the drawing. For an easier fitting of the rear leg, cut the hinge (D) to the shape shown *above*.

FORSTNER BIT AMAZING OFFER!

Quality, imported Forstner Bits make glass smooth, flat bottom, clean holes, even through veneer, knots and end grain, in any direction. Indispensable for furniture making. Will bore any arc of a circle, make pocket and blind holes and even make overlapping holes for mortising.

7-pc Set
¼" to 1" in wood case

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- Reusable Moulded Covers Protect Rims

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- ⅜" shanks

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3" FORSTNER BIT ½" SHANK

ONLY $34.99
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